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BTEC TECH DIT

EXAM BOARD: Edexcel   **COURSE CODE: TBC**

TOPIC NUMBER	TOPIC
Component 1: Exploring User Interface Design Principles and Project Planning Techniques	
1	A – Investigate user interface design for individuals and organisations
2	B – Use Project Planning techniques to plan and design a user interface
3	C – Develop and Review a User Interface
Component 2: Collecting, Presenting and Interpreting Data	
4	A – Investigate the role and impact of using data on individuals and organisations
5	B – Investigate the role and impact of using data on individuals and organisations
6	C – Draw conclusions and review presentation methods
Component 3: Effective Digital Working Practices (Exam)	
7	A - Modern technologies
8	B - Cyber security
9	C - The wider implications of digital systems
10	D – Planning and communication in digital systems
11 – 13	Glossary / Key Words
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Name: ....   Tutor Group: ....

COMPONENT 1: EXPLORING USER INTERFACE DESIGN PRINCIPLES AND PROJECT PLANNING TECHNIQUES
Learning Aim A: Investigate user interface design for individuals and organisations

1 | **Component 1 LA A**

ASSESSMENT CRITERIA

Level 1 Pass	Level 1 Merit	Level 2 Pass	Level 2 Merit	Level 2 Distinction
A.1P1 Identify design principles used in two different types of user interface, with an example for each interface. **A.1P2** Identify ways that the user interfaces meet user needs, with one example for each interface.	**A.1M1** Describe the design principles used in two different types of user interface, with some examples for each interface. **A.1M2** Describe ways that the user interfaces meet user needs, with some examples.	**A.2P1** Explain how two different types of user interface meet design principles, with some relevant examples. **A.2P2** Explain how the user interfaces meet user needs, with some relevant examples.	**A.2M1** Analyse how two different types of user interface meet the design principles and user needs, with relevant detailed examples.	**A.2D1** Assess how effectively two different types of user interface meet the design principles and user needs, with justified examples.

IN ORDER TO MEET THE ASSESSMENT CRITERIA ABOVE YOU MUST INVESTIGATE FOR 2 + USER INTERFACES

identify Design principles (A1, A2)	Describe each A1, A2	Using 2 e.g.s Explain A1, A2, A3	Analyse 2 x A1, A2, A3	How Well do 2 UI meet A1-A4

SENTENCE STARTERS

Label 2+ designs A1 , A2	Describe in label	Use A1, A2, A3 with e.g. labelled	UI meets A1 – A3 by…	UI 1 effectively meets A1-A4 by…

A1 What is a user interface?

Investigate different types of user interface used by individuals and organisations.
They will investigate how they vary across different uses, devices and purposes.
• Definition of user interface: o software features o human features o how software features can be used to facilitate human–device interaction.
• Types of interface: o text-based o speech/natural language o GUI/WIMPs o sensors o menu/forms.
• Range of uses, e.g.: o computers o handheld devices o entertainment systems o domestic appliances o controlling devices o embedded systems.
• Factors affecting the choice of user interface: o performance/response time o ease of use o user requirements o user experience o accessibility o storage space.
• Hardware and software influences: o operating systems/platforms o types/size of screen, e.g. touchscreen vs traditional displays o types of user input, e.g. keyboard, mouse, voice, gestures o hardware resources available, e.g. processing power, memory o emerging technologies, e.g. new innovations of input techniques.

A2 Audience needs

investigate the varying needs of the audience and how they affect both the type and the design of the interface.
• Accessibility needs: o visual o hearing o speech o motor o cognitive.
• Skill level: o expert o regular o occasional o novice.
•
Demographics: o age o beliefs / values o culture o past experiences.

A3 Design principles

Investigate a wide variety of design principles that provides both appropriate and effective user interaction with hardware devices.
• Colours: o use of limited range of colours o use of organisational house style o ensuring that colours do not clash o use of textures, e.g. glossy, corporate textures in colours, warm, fabric-style textures.
• Font style/size: o ensuring text style/style is readable o use of sans serif fonts for screen reading o avoiding decorative fonts.
• Language: o using appropriate language for user needs, e.g. age-appropriate language o using language that is appropriate for user skill level.
• Amount of information: o providing appropriate amount of information for the task o making appropriate use of white space.
• Layout: o consistency throughout the whole interface o keeping the layout as close as possible to user expectations o placing important In terms in prominent positions o grouping related tasks together o use of navigational components, e.g. search fields, breadcrumbs, icons o use of input controls, e.g. dropdown lists, tick boxes, toggles.
• User perception of: o colour, e.g. green to indicate go/successful interactions, orange to indicate warnings, red to indicate stop/errors o sound, e.g. positive high-pitched sounds, negative low-pitched sounds o symbols, e.g. green ticks o visuals, e.g. photographs, symbols, graphics.
• Retaining user attention: o grabbing attention, e.g. pop-up messages, flashing graphics, sound, animation o ensuring the screen is uncluttered o clearly labelled items/features o use of predetermined/default values for common user inputs o use of autofill to reduce the amount of data entry needed, e.g. postcodes o use of tip text to provide help if the user is unsure what buttons/tools do.
• Intuitive design: o use graphics to denote what buttons do o helpful pop-up messages o easy-to-use help feature o ensuring consistency o easy reversal of actions.

A4 Designing an efficient user interface

Investigate techniques that can be used to improve both the speed and access to user interfaces.
• Use of keyboard shortcuts
• Informative feedback
• Easy reversal of actions
• Ensuring buttons/links are distinguishable
• Using bigger objects to influence selection and reduce selection time
• Making objects stand out to reduce focus time
• Placing related objects next to each other to reduce selection time.

COMPONENT 1: EXPLORING USER INTERFACE DESIGN PRINCIPLES AND PROJECT PLANNING TECHNIQUES
Learning Aim B: Use project planning techniques to plan and design a user interface

ASSESSMENT CRITERIA				
B.1P3 Create a project plan for the design of a user interface that makes limited use of some project planning techniques. B.1P4 Create an initial design that meets some user requirements but is limited in most aspects.	B.1M3 Create a project plan for the design of a user interface that makes some relevant use of project planning techniques. B.1M4 Create an initial design that meets some user requirement	B.2P3 Create an appropriate project plan for the design of a user interface that makes relevant use of project planning techniques. B.2P4 Create a detailed initial design that shows how it meets most user requirements.	B.2M2 Create an appropriate project plan for the design of a user interface that makes effective use of project planning techniques and create a detailed and considered initial design that shows how it meets most user requirements.	B.2D2 Create an appropriate project plan for the design of a user interface that makes full and effective use of project planning techniques and create a comprehensive initial design that shows how it meets all user requirements.
IN ORDER TO MEET THE ASSESSMENT CRITERIA ABOVE YOU MUST				
Use the basic project plan. Design your initial thoughts.	Use a template and create the project plan. Make sure you cover all points below. Make a basic design with some comments.	Create your own template for the project plan. Make sure you cover all points below. Add detail your initial thoughts design.	Create your own template for the project plan – use tools. Make sure you cover all points below. Add detail your initial thoughts design.	Complete a project plan using all planning tools. PERT, mind maps, Gannt chart, critical path. Mood boards etc. Use SMART and considering all B2 criteria.
STARTERS				
Annotate your design	See Project plan Examples This meets the users needs by...	Adapt the project plan. This meets the users needs by.... My design meets the user needs by..	Improve on the project plan examples. This design meets the users needs by...	Createown project plan. Use all planning tools. This Design comprehensively meets the users requirements because...

B1 Project planning techniques

Investigate different planning tools and design methodologies that can be used to plan, monitor and execute projects.
• Planning tools:
o task lists
o written or graphical descriptions
o Gantt charts
o critical path diagram
o PERT charts
o mood boards
o mindmaps
• Methodologies:
o waterfall
o iterative, e.g. Agile.

B2 Create a project plan

Select suitable project planning techniques to develop a project plan for the development of a user interface for a given brief.
• SMART aims/objectives: o Specific o Measurable o Achievable o Realistic and Timely.
• Audience and purpose.
• Project requirements: o user requirements o output requirements, e.g. visual, audio, haptic o input requirements, e.g. mouse, keyboard, voice, touch o user accessibility.
• Timescales: o overall timescale o when tasks will be completed, including sub-tasks o key milestones, including iterative review points with the user o when resources will be needed. • Constraints: o time o resources o task dependencies o security. • Risks: o potential risks to project o contingency planning.

B3 Create an initial design

Produce a design that meets: o the user requirements, including input and output requirements
o user accessibility needs.
• Produce a design specification that includes:
o visualisation, e.g. storyboards, sketches
o hardware requirements
o software requirements
o a test strategy.
• Produce a design that allows for:
o increased user confidence/familiarity
o reduced learning time of new interfaces/features
o reduced time to complete tasks
o increased user attention
o reduced need for specialised knowledge

ASSESSMENT CRITERIA

C.1P5 Use their plan to develop a user interface that shows limited features, and which does not take user feedback into account. C.1P6 Identify one strength and one weakness of both their user interface and project plan.	C.1M5 Use their plan to develop and refine a user interface that shows limited features, using feedback to make limited changes. C.1M6 Describe strengths and weaknesses of both their user interface and project plan, with some examples of each.	C.2P5 Use their plan to develop and refine an appropriate user interface, using feedback to make some changes. C.2P6 Explain the strengths and weaknesses of both their user interface and project plan, summarising decisions made.	C.2M3 Use their plan to develop and refine an effective user interface that shows most features and analyse the strengths and weaknesses of their user interface and project plan, discussing decisions made	C.2D3 Use their plan to develop and refine an effective user interface that shows all features and assess the strengths and weaknesses of their user interface and project plan, justifying decisions made.

IN ORDER TO MEET THE ASSESSMENT CRITERIA ABOVE YOU MUST

Use some feedback to make changes.	Use some feedback to make changes – say why. How well did you plan work	Use feedback to make multiple changes. – say why the change was needed. The strengths and weaknesses of your user interface and plan are…	Show you are responding to comments from your client to make changes explain why you made them. how	You need to show how your design has changed **as** you have built it with client comments, showing why you made those changes.

SENTENCE STARTERS

		The feedback asked for.. changes because .. My UI and Plan are good / bad because..	My Client has asked for.. I made this change.. because My UI and Plan are good / bad because... I made that decision because..	Constantly - My Client has asked for.. I made this change.. because The Ui and Plan are good / bad because, I made that decision because and it was good /bad.

C1 Developing a user interface

Use their design to produce a user interface.
• Features:
o awareness of intended device, e.g. touchscreen, watch
o how the user requirements have been met
o the overall look and feel
 o inputs, e.g. key presses, mouse clicks, touch
o outputs, e.g. error messages, sounds o navigation methods
o ease of use.

C2 Refining the user interface

Refine their user interface using an iterative process with potential users.
• Refining the designs by:
o presenting the design to potential users
o refining the interface to account for potential user feedback
o repeating the iterative process until the design is complete.
• Document the changes made through each iteration.

C3 Review

Learners will review the success of the user interface and the use of their chosen project planning techniques. • Strengths and weaknesses of the user interface, e.g.:
 o how well the user requirements have been met
o suitability for audience and purpose
o ease of use
o how effectively the design principles have been met o areas that could be developed to better meet audience needs/design principles.
• Strengths and weaknesses of the project planning techniques, e.g.:
o how well the chosen project planning and methodologies met the needs of the task
o project constraints and how they were overcome o impact of using an iterative design approach
o lessons learned.

4	COMPONENT NUMBER 2: COLLECTING, PRESENTING AND INTERPRETING DATA Learning aim A: Investigate the role and impact of using data on individuals and organisations	Component 2 LA : A

A.1P2 Identify data that is used to make decisions across two different sectors. A.1P1 Identify data collection methods across two sectors.	A.1M2 Describe data that is used to make decisions across two sectors. A.1M1 Describe data collection methods across two sectors	A.2P2 Explain how data is used to make decisions across two sectors, with relevant examples A.2P1 Explain how data collection methods and their features affect the quality of data across two sectors, with relevant examples.	A.2M1 Discuss data collection methods and features used and how they affect the quality of data and decision making in two sectors, drawing justified conclusions.	A.2D1 Assess data collection methods and features used and how they affect the quality of data and decision making in two sectors, drawing detailed justified conclusions.

THIS PART OF THE UNIT IS ABOUT EVALUATING THE DATA SET YOU HAVE BEEN GIVEN

#
- the characteristics of data and information
- the data collection methods and features used
- the quality of the data collected by each company and how this impacts on decision making
- the reliability of the data
- how the data might be used by the company to make decisions.

You should then provide a comprehensive detailed assessment of:
- how the data was collected by the companies
- the features of the collection method used
- how reliable are the methods of collection that were used?
- the factors that might affect the quality of the data
- suggest how the data might be of use to the company
- suggest ways that data collection might be improved
- how the collection of this data might affect the privacy of customers.

SENTENCE STARTERS

The characteristics of the data are made up of (select the choices of text, number, date/time, currency)	The advantages and disadvantages of the data collection methods used are ….	Some of the ways the companies can use the data collected are ___ and ____	The way the companies have collected the data could be improved by _____ and _____. This means the data will be more _____	The privacy of customers is protected by _____ Act (date). This protects customers by _____. The company is
The type data collection methods used are…..	The quality of the information gathered can be impacted by ….	The data collected by the companies can be used to ___		not allowed to _____ and can only use the data for _____.

The Theory - Knowledge

Theory that you will need to know about for this component : Investigate the role and impact of using data on individuals and organisations.

A1 Characteristics of data and information - Learners will understand the concepts of data and that data is meaningless without converting it into information by adding structure and context.	A5 Quality of information and its impact on decision making - Learners will understand the factors that affect the quality of information and their impact on decision making.
A2 Representing information - Learners will understand the different ways of representing information and will be able to explain situations where they would be used.	A6 Sectors that use data modelling - Learners will understand that different types of organisation use data modelling to help make decisions.
A3 Ensuring data is suitable for processing - Learners will understand the methods that can be used to ensure data input is suitable and within boundaries so that it is ready to be processed	A7 Threats to individuals - Learners will understand the different threats that face individuals who have data stored about them.
A4 Data collection - Learners will understand how the data collection method and data collection features affect its reliability.	

B.1P3 Use methods to carry out limited manipulation of data, with a limited degree of accuracy	B.1M3 Use methods to carry out some manipulation of data, with some inaccuracies.	B.2P3 Select and use methods to carry out some manipulation of data, which is largely accurate.	B.2M2 Select and use relevant methods to effectively and accurately manipulate data and produce an effective dashboard that clearly summarises data.	B.2D2 Select and use relevant methods to effectively and accurately manipulate data and produce a fully efficient and comprehensive dashboard.
B.1P4 Produce a dashboard that produces a limited summary of data.	B.1M4 Produce a dashboard that produces a limited summary of data, with some appropriate presentation methods.	B.2P4 Produce an appropriate dashboard that clearly summarises data.		

THIS PART OF THE UNIT IS ABOUT EVALUATING THE DATA SET YOU HAVE BEEN GIVEN

You should:

- import the data into a spreadsheet
- apply data processing methods to manipulate the data
- use formulae to produce data summaries
- produce a dashboard to select and display data summaries.

You will produce a written document containing screenshots that:

- shows the completed dashboard
- the choice of presentation features used
- the data manipulation tools used.

SENTENCE STARTERS

The data set I decided to use is _____. I chose this data set because _____.	The pivot tables I created are _____.	Other formulae I used are _____.	The charts I used are _____, _____ and _____.	The reasons I chose those charts is because _____.
To manipulate the data I _____.	The excel functions I used are _____. I used these because_____.	I sorted the data to make it easier to understand by _____.		

The Theory - Knowledge

- What is a dashboard - Identify the essential features of a dashboard and what benefits they have over other methods of presenting data. Why do people use dashboards? What makes a good dashboard?

- Functions – Be able to use simple functions such as SUM, MIN, MAX, AVERAGE. Be able to use more advanced functions such as IF statements as well as conditional formatting.

- Be able to use the Pivot table and charts features to manipulate data

- Understand why different charts are used to display different types of data, and be able to create and format these charts to make them more meaningful

- Know the difference between VLOOKUP and HLOOKUP functions.

- Be able to create a suitable dashboard appropriate to user needs and be able to explain design choices

| **C.1P5** Use the dashboard to identify trends in the data. | **C.1M5** Use the dashboard to outline some trends in the data. | **C.2P5** Use the dashboard to draw conclusions, with some appropriate recommendations. | **C.2M3** Analyse how the dashboard's presentation of data influences the conclusions drawn and the recommendations made, using relevant examples. | **C.2D3** Assess the effectiveness of the dashboard's presentation of data and how it affects the conclusions drawn and the recommendations made, using justified examples. |
| **C.1P6** Identify the methods used to present data. | **C.1M6** Describe the methods used to present data so that it can be understood, with brief examples. | **C.2P6** Explain the methods used to present data so that it can be clearly understood, with detailed examples. | | |

THIS PART OF THE UNIT IS ABOUT EVALUATING THE DATA SET YOU HAVE BEEN GIVEN

The user interface should allow:

- the public to obtain information about the stadium's facilities, including refreshments, the shop and public conveniences.

The user interface should focus purely on the overall look and feel and the user navigation methods.

The user interface should show how the user interface is appropriate for the intended device and the impact this will have on the user and show:

- all features, including the overall look and feel
- how the user inputs data
- how the interface responds and will output to the user
- how the user navigates around the user interface.

All user interactions should match user expectations and the user interface should purely focus on the overall look/feel and the user navigation methods.

Sentence Starters

| The presentation methods I have used for the dashboard are _____. I chose these methods because _____. | **Analysis** for each chart:
The charts shows that (interpret the results)_____.
The actual numbers for this chart are _____.
The company could use this data for _____. | **Recommendations -** I would make to the company based on the data analysis are_____

Conclusions/evaluation – The dashboard I have create is good because _____. It can be improved by _____. |

The Theory – Skills and Knowledge

- Drawing conclusions and making recommendations - Students identify any trends or patterns in the data and make recommendations to the organisation based on the trends / patterns they have identified

- How presentation affects understanding – students create a dashboard which presents the data clearly without it being open to misinterpretation.
- Evaluation – students evaluate the effectiveness of their dashboard in presenting the information

Learners should learn about how current and modern technologies are used by and have an impact on organisations and their stakeholders. Learners need to know the ways in which organisations and associated individuals use modern technologies to exchange information, communicate, and complete work-related tasks.
Learners must be able to apply their knowledge to a range of vocational contexts.

A1 Modern technologies

- Communication technologies: o setting up ad hoc networks (open Wi-Fi, tethering/personal hotspot) o security issues with open networks o performance issues with ad hoc networks o issues affecting network availability (rural vs city locations, developed vs developing countries, available infrastructure, mobile network coverage, blackspots).
- Features and uses of cloud storage: o setting and sharing of access rights o synchronisation of cloud and individual devices o availability (24/7) o scalability (getting more by renting/freeing to save money).
- Features and uses of cloud computing: o online applications o consistency of version between users (features, file types) o single shared instance of a file o collaboration tools/features.
- How the selection of platforms and services impacts on the use of cloud technologies: o number and complexity of features o paid for versus free o interface design (layout, accessibility, mobile vs desktop) o available devices.
- How cloud and 'traditional' systems are used together: o device synchronisation o online/offline working o notifications.
- Implications for organisations when choosing cloud technologies: o consideration of disaster recovery policies (service provider's, organisation's) o security of data (location, service provider's security procedures and features) o compatibility o maintenance (software updates, downtime, staff expertise) o getting a service/storage up and running quickly o performance considerations (responsiveness to user, complexity of task, available devices and communication technologies)

A2 Impact of modern technologies

- Changes to modern teams facilitated by modern technologies: o world teams (not bound by geographical restrictions, diversity) o multicultural o inclusivity (facilitation of member's needs) o 24/7/365 (no set work hours, team members in different time zones) o flexibility (remote working vs office based, permanent vs casual staff).
- How modern technologies can be used to manage modern teams: o collaboration tools o communication tools o scheduling and planning tools.
- How organisations use modern technologies to communicate with stakeholders: o communication platforms (website, social media, email, voice communication) o selection of appropriate communication channels (private/direct message, public status update) for sharing information, data and media.
- How modern technologies aid inclusivity and accessibility: o interface design (layout, font and colour selection) o accessibility features (screen reader support, alt text, adjustable typeface/font size, text to speech/'listen to this page') o flexibility of work hours and locations.
- Positive and negative impacts of modern technologies on organisations in terms of: o required infrastructure (communication technologies, devices, local and web-based platforms) o demand on infrastructure of chosen tools/platforms o availability of infrastructure o 24/7 access o security of distributed/disbursed data o collaboration o inclusivity (age, health, additional needs, multicultural) o accessibility (meeting legal obligations, provision requirements) o remote working.
- Positive and negative impacts of modern technologies on individuals: o flexibility (home/remote working) o working styles (choice of time, device, location) o impact on individual mental wellbeing (depression, loneliness, self-confidence, separation from stressful environment, feel in control of own schedule, schedule adjusted to meet needs of family, less time commuting).

Learners must understand how the increased reliance of organisations on digital systems to hold data and perform vital functions presents a range of challenges and dangers. They should understand the nature of threats to digital systems and ways that they can be mitigated through organisation policy, procedures and the actions of individuals. They should be able to apply knowledge of cyber security to a range of vocational contexts.

B1 Threats to data

Learners should understand why systems are attacked, the nature of attacks and how they occur, and the potential impact of breaches in security on the organisation and stakeholders.

- Why systems are attacked: o fun/challenge o industrial espionage o financial gain o personal attack o disruption o data/information theft.
- External threats (threats outside the organisation) to digital systems and data security: o unauthorised access/hacking (black hat) o malware (virus, worms, botnet, rootkit, Trojan, ransomware, spyware) o denial of service attacks o phishing (emails, texts, phone calls) o pharming o social engineering o shoulder surfing o 'man-in-the-middle' attacks.
- Internal threats (threats within the organisation) to digital systems and data security: o unintentional disclosure of data o intentional stealing or leaking of information o users overriding security controls o use of portable storage devices o downloads from internet o visiting untrustworthy websites.
- Impact of security breach: o data loss o damage to public image o financial loss o reduction in productivity o downtime o legal action.

B2 Prevention and management of threats to data

Learners should understand how different measures can be implemented to protect digital systems. They should understand the purpose of different systems and how their features and functionality protect digital systems. Learners should understand how one or more systems or procedures can be used to reduce the nature and/or impact of threats.

- User access restriction: o physical security measures (locks) o passwords o using correct settings and levels of permitted access o biometrics o two-factor authentication (who you are, what you know, what you have).
- Data level protection: o firewall (hardware and software) o software/interface design (obscuring data entry, autocomplete, 'stay logged in') o anti-virus software o device hardening o procedures for backing up and recovering data o encryption of stored data (individual files, drive) o encryption of transmitted data.
- Finding weaknesses and improving system security: o ethical hacking (white hat, grey hat) o penetration testing o analyse system data/behaviours to identify potential risks.

B3 Policy

Learners should understand the need for and nature of security policies in organisations. They should understand the content that constitutes a good security policy and how it is communicated to individuals in an organisation. To ensure that potential threats and the impact of security breaches are minimised, learners should understand how procedures in security policies are implemented in organisations.

- Defining responsibilities: o who is responsible for what o how to report concerns o reporting to staff/employees.
- Defining security parameters: o password policy o acceptable software/installation/usage policy o parameters for device hardening.
- Disaster recovery policy: o who is responsible for what o dos and don'ts for staff o defining the backup process (what is backed up, scheduling, media) o timeline for data recovery o location alternative provision (hardware, software, personnel).
- Actions to take after an attack: o investigate (establish severity and nature) o respond (inform/update stakeholders and appropriate authorities) o manage (containment, procedures appropriate to nature and severity) o recover (implement disaster recovery plan, remedial action) o analyse (update policy and procedures).

Learners should understand the wider implications of digital systems and their use. Learners should understand how legislation covering data protection, computer crimes and intellectual property has an impact on the way that organisations and individuals use digital systems and data. Learners should understand the procedures that organisations must follow in order to conform to legal requirements and professional guidelines.

C1 Responsible use

Learners should consider the responsible use of digital systems, including how systems and services share and exchange data as well as the environmental considerations of increased use.

- Shared data (location-based data, transactional data, cookies, data exchange between services): o benefits of using shared data o drawbacks of using shared data o responsible use (legal considerations, privacy, ethical use).
- Environmental: o impact of manufacturing, use, and disposal of it systems (energy, waste, rare materials) o considerations when upgrading or replacing digital systems o usage and settings policies (auto power off, power-saving settings, hard copy vs electronic distribution).

C2 Legal and ethical

Learners should understand the scope and purpose of legislation (valid at time of delivery) that governs the use of digital systems and data, and how it has an impact on the ways in which organisations use and implement digital systems. Learners should understand the wider ethical considerations of use of technologies, data and information, and organisations' responsibilities to ensure that they behave in an ethical manner.

- Importance of providing equal access to services and information: o benefits to organisations, individuals and society o legal requirements o professional guidelines/accepted standards.
- Net neutrality and how it impacts on organisations.
- The purpose and use of acceptable use policies: o scope – who the document applies to o assets – the equipment, documents, and knowledge covered by the policy o acceptable – behaviours that are expected/required by an organisation o unacceptable – behaviours that are not allowed by an organisation o monitoring – description of how behaviour is monitored by an organisation o sanctions – defining the processes and potential sanctions if unacceptable behaviour occurs o agreement – acknowledge (sign, click) that an individual agrees to abide by the policy.
- Blurring of social and business boundaries: o use of social media for business purposes o impact of personal use of digital systems (social media, web) on professional life.
- Data protection principles: o lawful processing o collected only for specific purpose o only needed information is collected o should be accurate o kept only as long as is necessary o data subject rights o protected o not transferred to countries with less protection.
- Data and the use of the internet: o the right to be forgotten o appropriate and legal use of cookies and other transactional data.
- Dealing with intellectual property: o the importance of intellectual property in organisations o methods of identifying/protecting intellectual property (trademarks, patents copyright) o legal and ethical use of intellectual property (permissions, licensing, attribution).
- The criminal use of computer systems: o unauthorised access o unauthorised modification of materials o creation of malware o intentional spreading of malware.

Learners should understand how individuals in the digital sector plan solutions and communicate meaning and intention. They should understand how different forms of written and diagrammatical communication can be used to express understanding and demonstrate the flow of data and information

D1 Forms of notation

Learners should be able to interpret and use standard conventions to combine diagrammatical and written information to express an understanding of concepts.

- Understand how organisations use different forms of notation to explain systems, data and information: o data flow diagrams o flowcharts o system diagrams o tables o written information.
- Be able to interpret information presented using different forms of notation in a range of contexts.
- Be able to present knowledge and understanding using different forms of notations:
  - data flow diagrams
  - information flow diagrams
  - flowcharts.

Key Word Revision can be done on

https://quizlet.com/join/gUcKQaWuD

Theory and then Revision can be done on https://www.knowitallninja.com

Modern Technologies	✓	Policy	✓
Communication Technologies		Defining Responsibilities & Parameters	
Features & Uses of the Cloud		Disaster Recovery	
Selection of Cloud Technologies		**Responsible Use**	
Implications of Cloud Technologies		Shared Data	
Impact of Modern Technologies		Environmental Concerns	
Changes to Modern Teams		**Legal and Ethical**	
Managing Modern Teams		Equal Access & Net Neutrality	
Communicating with Stakeholders & Accessibility		Acceptable Use & Boundaries	
Impact of Modern Technology on Organisations		Data Protection	
Impact of Modern Technology on Individuals		Intellectual Property & Criminal Use	
Threats to Data		**Forms of Notation**	
Why Systems are Attacked		Use of Different Forms of Notation	
External Threats		Data Flow Diagrams	
Internal Threats		Information Flow Diagrams	
Prevention & Management of Threats		Flowcharts	
User Access Restrictions			
Data Level Protection 1			
Data Level Protection 2 & Finding Weaknesses			

Course Glossary / Key Words

Absolute addresses do not change when the formula is copied. They are created by including a $ sign in front of the column letter and/or row number.

Access control list (ACL) is a list that tells the network which data can be sent and received.

Accessibility is about how devices are designed for people with disabilities to use with ease.

Ad hoc network is a type of wireless network that does not rely on fixed hardware such as routers in wired networks.

ALT text is alternative text that describes an onscreen image for users with visual impairments.

Anomaly is when something differs from the normal or what is expected.

Bias is an external factor that may influence results.

Bluetooth® is a short-range technology that connects multiple devices, for example mobile phones, speakers etc., together in a smaller area (usually 10 metres or less).

Breadcrumbs is the term used to describe a user interface component that makes navigation easy and instinctive.

Bugs are flaws in computer programs or systems.

Cell is an individual box on a worksheet.

Central Processing Unit (CPU) is central to every PC and device. It's the computer's brain and without it a PC cannot function.

Cognitive needs cover a wide range of disabilities, including developmental delays, learning disabilities, brain injuries and dementia.

Constraint is a limitation or restriction that you face while completing a project.

Consumables are items such as ink cartridges, paper, toner, cleaning products, maintenance tools and cables.

Copyright is a legal right protecting the use of your work. There are different rules about how and when your work could be used and how long copyright is retained.

Cracks comes from the expression 'crack the code'. This is usually a so ware program that removes the need to register the so ware to be able to use it.

Dashboard is a display of important information, using visual and other methods of presentation.

Data is a collection of numbers or text that is stored and processed by computer systems.

Data flow diagrams (DFDs) are made up of four key components. Different versions of these diagrams may use slightly different symbols, but the meaning will still be the same.

Data models are a way of showing the relationships between data and investigating the possible outcomes of change.

Data Protection Controller is the named person in an organisation who takes responsibility for the safety and security of the organisation's data.

Data subject is an individual whose personal data is being stored.

Default password is one that is automatically allocated when your account is set up. Users are always advised to change default passwords on first use.

Delimiting is the use of one or more characters to separate one data item from another.

Denial-of-service (DoS) attacks attack a remote computer by making it unable to respond to legitimate user requests.

Digital footprint is the trail you leave when you visit different sites on the internet. You can view your footprint by visiting the browser history section of your browser.

Discrimination is the unfair treatment of individuals (or groups) based on factors such as race, age, gender or disability.

Dispersed data is multiple copies of the same data in different locations.

Distributed data is split into lots of bits and stored in different places.

Downloading a document or le to your computer or device means it can be used when you are not connected to the internet.

Downtime is a period when a computer and its services are unavailable.

Encrypted means that information or data has been converted to a type of code that cannot be understood without a translation key.

Engaged is a term used to describe how involved someone is in a task and how much attention they are paying to it.

Executive summary (sometimes just called a summary) is a description of the important points of the document.

Fields divide data up into groups of all the same type, such as people's names or their phone numbers. Typically, the fields make up the columns within a table of data.

Firewall is a device that protects an IT system (or network) from unauthorised access by blocking 'bad' network traffic.

Form controls include buttons, tick boxes and option boxes to enable the user to enter information.

Function is a type of formula that carries out a calculation. Spreadsheets have many different functions than can be used.

Geo-data is geographical information that is stored in a way that it can be used by devices such as smartphones and tablets to provide data about your location.

GPS (Global Positioning System) is a navigational system that uses data transmitted by satellites to calculate the location of the GPS-enabled device.

Haptic relates to a sense of touch. Haptic outputs recreate the sense of touch by applying forces to the user.

House style refers to a set of rules that an organisation follows on all their documents to ensure they are all consistent.

Icons are small computer graphics. This is usually an image representing an application or file.

Infographics combine several methods of presenting complex information, such as graphs, diagrams, images and tables, in a brief, clear and visual way.

An **information flow diagram** (IFD) is a diagram that shows how information flows around a system.

Insecure connections mean that other users would be able to intercept the data being transmitted between your device and its destination. This could include your login

credentials, bank account details, email addresses, etc.

Integers are whole numbers with no fractional part; for example, 15.

Intellectual property is an idea that you invented that belongs to you, for example, an image that is copyrighted.

Intuitive means easy to understand. In this context a user should be able to understand and interact with an interface instinctively.

Invalid data is incorrect or unsuitable.

Iteration is a new version of a piece of computer hardware or software – used for testing and improving.

Iterative methodology is when one set of requirements are analysed, designed, implemented, tested and evaluated before continuing to the next set of requirements.

Keyboard shortcuts are combinations of keystrokes or a sequence of keystrokes which commands the software.

Local area network (LAN) is a network based on geographical location, such as an office or a school.

Macro is a small program that carries out instructions to perform a particular task, for example, it can be used to automate spreadsheet functions.

Malware is a malicious form of so ware that is transferred to, and then executed on, a user's machine to damage or disrupt the system or allow unauthorised access to data.

Milestones are stages of a project by which time something should have been developed for a stage when a decision will be made.

Motherboard is the main electronic circuit board that all the other computer components, such as memory, processor, and graphics card etc., plug into.

Motor needs relates to users who have limited function in their movement, muscle control or mobility.

Navigate/Navigation is how a user works their way around the so ware.

Nodes represent different tasks that will be completed within a project. They will often contain the task number or letter.

Notation means using symbols to represent something. In IT this means using diagrams to represent a range of ideas.

Operating systems control the whole operation of a computer system such as mobile phones or tablet computers.

Patent is the exclusive rights granted to a person or organisation for a specific idea, design or invention.

Pattern is a repeating change in the data over time.

Peer to peer (P2P) is a way of explaining two systems that are connected and have the same rights and privileges.

A **peripheral** device is a computer device, such as a keyboard or printer that is not part of the essential computer (i.e. the memory and microprocessor). These auxiliary devices are connected to the computer e.g. a mouse.

Personal area network (PAN) is a computer network used for data communication between devices.

Personal hotspot is using a phone's internet connectivity when connected to a device to access the internet from the laptop.

PERT stands for Program Evaluation Review Technique.

Pharming is a cyberattack that uses malware to direct a user to a fake website that requests information.

Phishing is a cyberattack that sends spam messages to try and trick people to reply with desired information.

PIN is an acronym meaning personal identification number.

Pixels are the smallest dots that make up the screen on our devices. An image is made up of millions of pixels.

Plagiarism is copying someone else's work or intellectual property without acknowledging them and claiming it as your own.

Platform is the name given to the computer (hardware) and operating system (so ware) on which applications can be run.

Predetermined defines something that is set in advance such as a drop-down list.

Privilege is a set of rules that allows users to use specific components or access data folders or files.

Productivity is a measure of effectiveness – how long it takes an employee to produce an item for sale.

Productivity software is so ware that is made up of a suite of different programs such as Microsoft office or the Google Drive Apps.

Project methodology is a term used to define the phases and processes that should be completed within a project and the order that they are completed in.

Prominent means to stand out easily and be particularly noticeable.

Qualitative information is information that describes qualities that cannot be represented numerically.

Quantitative information is information that describes information that can be measured and best represented by numbers.

Random-access memory (RAM) stores the files that the device has open and stores the information from any applications in use.

Ransomware is a form of malware, usually infecting unprotected digital systems occurring when users open malicious email attachments.

Record is one complete set of fields. Typically, the records make up the rows within a table of data.

Relative addressing is where the cell in a formula changes relative to the row and/or column where it is copied.

Remedial action is an action taken to x something that has gone wrong; a remedy.

Replication is the process of copying something.

Rootkit is a collection of tools or programs that allow an unauthorised user to obtain undetected control of a computer system.

Security patches are additional settings or program codes that fix vulnerabilities in applications, operating systems and device firmware, and are usually downloaded from the manufacturer.

Sensors detect and respond to the environment around them. They can be responsive to heat, light, sound, movement or patterns.

A **server** is a computer that manages lots of processing requests, delivering data

between machines that are connected in a local network.

Session cookies are data stored by the web browser until it is closed.

Shoulder surfing is obtaining sensitive personal information from a user by literally looking over their shoulder while they use digital devices such as computers, cash-dispensing machines etc.

Social engineering is the act of getting users to share sensitive information through a false pretext (commonly known as 'blagging').

Software allows users to complete tasks or to create something. There are different types of so ware to control hardware and applications such as word processing.

Software audit is a manual or automated process that lists the name, version and installation date of all so ware found on a digital device. The process may be carried out remotely, for example, across a network, or in person.

Spam is electronic junk mail, usually sent with a commercial purpose.

Spyware is so ware that is installed on a device without the user's knowledge. It can gather information about their computer activities by transmitting data secretly from their hard drive.

Stakeholders are those with an interest or investment in a business or organisation and who are affected by changes, decisions or financial concerns, such as employees and suppliers.

Streaming data is sent to your device in a continuous flow when the device is connected to the internet. When streaming a movie, you are watching it at the same time as the movie file's data is being downloaded over the internet.

String operation is editing (manipulation) that is carried out on a text string.

Swipe card is a plastic credit card-sized device, often with a metallic strip that contains information that is scanned by a sensor to verify the user's identity and access to a secured location.

Synchronising is when files held on two devices are updated to make sure that both devices have the same content. Synoptic question is a question that tests your knowledge from across the whole course.

Synoptic questions allow you to show your understanding of concepts from all three components and apply your learning to realistic contexts.

System administrator is a person who is responsible for a technology or series of technologies. They have to make sure that the systems are maintained, configured and reliable.

Task dependencies are the previous tasks that should be completed before a new task can start. For example, Task B depends on Task A and therefore Task B cannot start until Task A is fully complete.

Tethering is where a smartphone acts as an access point, allowing other devices to connect to it using wired or wireless connectivity, in order to share its mobile broadband connection to the internet.

Text string is a sequence of characters; for example, the password 46*lKpQE is a text string of eight characters.

Third party cookies are text files that may be downloaded to your system without your knowledge while you are visiting a website. They contain information about the sites you have visited.

Tip text is text that appears on the screen when the user hovers over an item.

Trademark is the recognisable design, words or symbols that have been legally registered by a company or individual for a company, product or name.

Trend is when there is a change over time, such as an increase or decrease in a value.

Trojans are types of malware disguised as legitimate programs.

Uploading a document or le to the server means it can be accessed by you (and others with access), although your device will need to be connected to the internet.

URL stands for Uniform Resource Locator and is the address of a page on the World Wide Web.

USB stands for Universal Serial Bus. It is a standard for connection sockets on computers, connecting devices such as mice, keyboards, printers, external hard drives, etc.

User interface is a piece of software that allows users to interact with their devices.

Valid data is correct or suitable.

Validation involves testing that the input data conforms to certain rules.

Verification involves entering data more than once to ensure the entries are the same.

Version control records changes to documents and files over time so that all versions can be recalled if needed.

Virtual machines (VMs) are software applications that are designed to behave as if they are a whole computer. A larger computer will run several virtual machines, using the larger computer's resources, but behaving as if they are separate devices.

Vulnerable describes a flaw or weakness in the design, implementation or configuration of a system. Known vulnerabilities can be exploited by 'black hats' to attack a digital system.

Waterfall methodology requires one whole task or section to be completed before another task begins. All the project requirements are analysed, then designed, implemented, tested and evaluated at the same time within each stage.

Wiki is a web page (or pages) that has been developed collaboratively by a group of people.

Worksheet is the table of cells within a spreadsheet. The collection of worksheets in a single spreadsheet files is called a workbook.

Worms are small computer programs that can spread to other programs.

Component 1 Checklist

Level 1 Pass	Level 1 Merit	Level 2 Pass	Level 2 Merit	Level 2 Distinction
Learning aim A: Investigate user interface design for individuals and organisations				
A.1P1 Identify design principles used in two different types of user interface, with an example for each interface.	**A.1M1** Describe the design principles used in two different types of user interface, with some examples for each interface.	**A.2P1** Explain how two different types of user interface meet design principles, with some relevant examples.	**A.2M1** Analyse how two different types of user interface meet the design principles and user needs, with relevant detailed examples.	**A.2D1** Assess how effectively two different types of user interface meet the design principles and user needs, with justified examples.
A.1P2 Identify ways that the user interfaces meet user needs, with one example for each interface.	**A.1M2** Describe ways that the user interfaces meet user needs, with some examples.	**A.2P2** Explain how the user interfaces meet user needs, with some relevant examples.		
Learning aim B: Use project planning techniques to plan and design a user interface				
B.1P4 Create an initial design that meets some user requirements but is limited in most aspects.	**B.1M3** Create a project plan for the design of a user interface that makes some relevant use of project planning techniques.	**B.2P3** Create an appropriate project plan for the design of a user interface that makes relevant use of project planning techniques.	**B.2M2** Create an appropriate project plan for the design of a user interface that makes effective use of project planning techniques and create a detailed and considered initial design that shows how it meets most user requirements.	**B.2D2** Create an appropriate project plan for the design of a user interface that makes full and effective use of project planning techniques and create a comprehensive initial design that shows how it meets all user requirements.
	B.1M4 Create an initial design that meets some user requirements.	**B.2P4** Create a detailed initial design that shows how it meets most user requirements.		
Learning aim C: Develop and review a user interface				
C.1P5 Use their plan to develop a user interface that shows limited features and which does not take user feedback into account.	**C.1M5** Use their plan to develop and refine a user interface that shows limited features, using feedback to make limited changes.	**C.2P5** Use their plan to develop and refine an appropriate user interface, using feedback to make some changes.	**C.2M3** Use their plan to develop and refine an effective user interface that shows most features and analyse the strengths and weaknesses of their user interface and project plan, discussing decisions made.	**C.2D3** Use their plan to develop and refine an effective user interface that shows all features and assess the strengths and weaknesses of their user interface and project plan, justifying decisions made.
C.1P6 Identify one strength and one weakness of both their user interface and project plan.	**C.1M6** Describe strengths and weaknesses of both their user interface and project plan, with some examples of each.	**C.2P6** Explain the strengths and weaknesses of both their user interface and project plan, summarising decisions made.		

Component 2 Checklist

Level 1 Pass	Level 1 Merit	Level 2 Pass	Level 2 Merit	Level 2 Distinction
Learning aim A: Investigate the role and impact of using data on individuals and organisations				
A.1P1 Identify data collection methods across two sectors.	**A.1M1** Describe data collection methods across two sectors.	**A.2P1** Explain how data collection methods and their features affect the quality of data across two sectors, with relevant examples**.**	**A.2M1** Discuss data collection methods and features used and how they affect the quality of data and decision making in two sectors, drawing justified conclusions.	**A.2D1** Assess data collection methods and features used and how they affect the quality of data and decision making in two sectors, drawing detailed justified conclusions.
A.1P2 Identify data that is used to make decisions across two different sectors.	**A.1M2** Describe data that is used to make decisions across two sectors.	**A.2P2** Explain how data is used to make decisions across two sectors, with relevant examples.		
Learning aim B: Create a dashboard using data manipulation tools				
B.1P3 Use methods to carry out limited manipulation of data, with a limited degree of accuracy.	**B.1M3** Use methods to carry out some manipulation of data, with some inaccuracies.	**B.2P3** Select and use methods to carry out some manipulation of data, which is largely accurate.	**B.2M2** Select and use relevant methods to effectively and accurately manipulate data and produce an effective dashboard that clearly summarises data.	**B.2D2** Select and use relevant methods to effectively and accurately manipulate data and produce a fully efficient and comprehensive dashboard.
B.1P4 Produce a dashboard that produces a limited summary of data.	**B.1M4** Produce a dashboard that produces a limited summary of data, with some appropriate presentation methods.	**B.2P4** Produce an appropriate dashboard that clearly summarises data.		
Learning aim C: Draw conclusions and review data presentation methods				
C.1P5 Use the dashboard to identify trends in the data.	**C.1M5** Use the dashboard to outline some trends in the data.	**C.2P5** Use the dashboard to draw conclusions, with some appropriate recommendations.	**C.2M3** Analyse how the dashboard's presentation of data influences the conclusions drawn and the recommendations made, using relevant examples.	**C.2D3** Assess the effectiveness of the dashboard's presentation of data and how it affects the conclusions drawn and the recommendations made, using justified examples.
C.1P6 Identify the methods used to present data.	**C.1M6** Describe the methods used to present data so that it can be understood, with brief examples.	**C.2P6** Explain the methods used to present data so that it can be clearly understood, with detailed examples.		
Level 1 Pass	Level 1 Merit	Level 2 Pass	Level 2 Merit	Level 2 Distinction
Overall component grade				
Learner evidence satisfies all Level 1 Pass criteria	Learner evidence satisfies either: all Level 1 Merit criteria or all Level 1 Pass criteria and C.2P5, C.2P6	Learner evidence satisfies all Level 2 Pass criteria	Learner evidence satisfies either: all Level 2 Merit criteria or all Level 2 Pass criteria and C.2D3	Learner evidence satisfies all Level 2 Distinction criteria

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Y11 GCSE Exam Dates

Y11 Mock(s): _____

Y11 PPE(s): _____

Final GCSE(s): _____

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Success Programme Sessions:

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Revision Guide (if applicable):

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