THE DUSTON SCHOOL 4-19

Knowledge Organiser

Digital Information Technology

Year 10: Unit 1, User Interface, Learning Aim A, B & C

Enquiry Questions

A1— What is a user interface?

- What is a user interface and how do they vary across different uses, devices and purposes?
- How can software features be used to facilitate human-device interaction?
- What are the different types of user interfaces?
- Where can user interfaces be used?
- What factors can affect the choice of user interface?

A2— Audience needs

- What varying needs do we need to consider when looking at the type and design of the interface?
- When looking at skill level, how can you adapt the interface?
- In terms of demographics such as age, beliefs, culture and past experiences, what do we need to consider with an interface?

A3 & A4—Design principles

- What is a house style and how can we use this within the design of our user interface?
- How can we ensure that the colours we use are suitable for the differing audience needs?
- What do we need to consider, in terms of written language when designing a user interface?
- What navigational components and input controls could we consider for our user interface?

B1— Project planning techniques

- What is a gantt chart/critical path diagram/PERT charts and how does it relate to project planning for a user interface?
- How can a mood board/mind map aid you when planning for your user interface?
- What is a waterfall methodology and how can it aid you when planning for your user interface?

B2— Project planning techniques

- What does SMART mean and how can it aid the development of a plan?
- Why do we need to consider audience and purpose when planning?

B3— Create an initial design

- What considerations do we need to consider other than sketching out our designs?
- What hardware and software do we need do you need to run your user interface?
- How can we ensure that your user interface is inclusive

when considering accessibility?

Enquiry Questions

C1— Developing a user interface

- What navigation methods can we use to create the user interface?
- What elements can we add to a user interface to aid use? E.g error messages, sounds etc

C2— Refining the user interface

- What methods can we use to present the design to potential users?
- How can we refine the interface to account for potential user feedback?

C3— Review

- What are the strengths and weaknesses of your user interface?
- How can we check that the user requirements have been met?
- Is your user interface suitable for audience and purpose?
- What areas could be developed to better meet the audience needs and design principles?
- How well were the project planning and methodologies met for the needs of the task?

Vocabulary

Describe Give a clear, objective account in their own words, showing recall, and in some cases application, of relevant features and information.	**Explain** Provide details and give reasons and/or evidence to support an argument.	**Analyse** Examine methodically and in detail, typically in order to interpret.
GUI Allows users to interact with electronic devices through graphical icons and visual indicators such as secondary notation, instead of text-based user interfaces, typed command labels or text navigation.	**WIMP** "windows, icons, menus, pointer" , denoting a style of interaction using these elementsof the user interface.	**User experience** Refers to a person's emotions and attitudes about using a particu- lar product, system or service.
Demographics Consideration of statistical data relating to the population and particular groups within it.	**House style** A company's preferred manner of presentation and layout of written material.	**Accessibility** Refers to the design of products, devices, services, or environments for people who experience disabilities.
Interaction Is a kind of action that occur as two or more objects have an effect upon one another.	**Menu Interface** Interact with a computer or device by working your way through a series of screens or menus.	**Speech and Sound Interface** This type of interface allows the user to speak or type in their normal everyday language in order to interact with the computer.

Knowledge

Learning aim A: Investigate user interface design for individuals and organisations

A1 What is a user interface?

Learners will 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
- Types of interface
- Range of uses
- Factors affecting the choice of user interface
- Hardware and software influences

A2 Audience needs

Learners will investigate the varying needs of the audience and how they affect both the type and the design of the interface.

- Accessibility needs
- Skill level
- Demographics

A3 Design principles

Learners will investigate a wide variety of design principles that provides both appropriate and effective user interaction with hardware devices.

- Colours
- Font style/size
- Language
- Amount of information
- Layout
- User perception
- Retaining user attention
- Intuitive design

A4 Designing an efficient user interface

Learners will 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

Knowledge

Learning aim B: Use project planning techniques to plan and design a user interface

B1 Designing an efficient user interface

Learners will investigate different planning tools and design methodologies that can be used to plan, monitor and execute projects.

- Planning tools
- Methodologies

B2 Create a project plan

Learners will select suitable project planning techniques to develop a project plan for the development of a user interface for a given brief.

- SMART aims/objectives
- Audience and purpose.
- Project requirements:
- Timescales
- Constraints
- Risks

B3 Create an initial design

Learners will create an initial design using the design principles listed in section A3.

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

Knowledge

Learning aim C: Develop and review a user interface

C1 Developing a user interface

Learners will use their design to produce a user interface.

- Features:
- awareness of intended device, e.g. touchscreen, watch
- how the user requirements have been met
- the overall look and feel
- inputs, e.g. key presses, mouse clicks, touch
- outputs, e.g. error messages, sounds
- navigation methods
- ease of use.

C2 Developing a user interface

Learners will refine their user interface using an iterative process with potential users.

- Refining the designs by:
- presenting the design to potential users
- refining the interface to account for potential user feedback
- 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
- Strengths and weaknesses of the project planning techniques

Assessment

Now that you have studied all topics in Learning aim A, you will need to show that you understand how different types of user interfaces meet a range of different design principles and be able to give relevant examples. You also need to show that you understand how different types of user interface meet a range of different user needs and be able to give relevant examples.

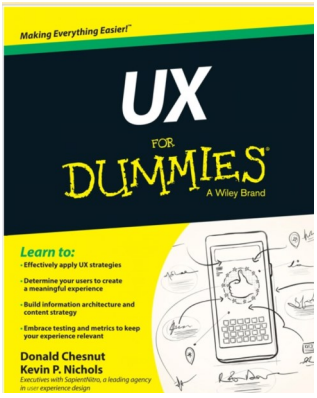
Level 1 Pass	Level 1 Merit	Level 2 Pass	Level 2 Merit	Level 2 Dist
Learning aim A: Investigate user interface design for individuals and organisations				
A.1P1 Identify design principles used in two different types of user interfaces, with an example for each interface.	**A.1M1** Describe the design 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.		

Level 1 Pass	Level 1 Merit	Level 2 Pass	Level 2 Merit	Level 2 Dist
Learning aim B: Use project planning techniques to plan and design a user interface				
B.1P3 Create a project plan for the design of a user interface that makes limited use of some project planning techniques.	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.1P4 Create an initial design that meets some user requirements but is limited in most aspects.	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.		

Level 1 Pass	Level 1 Merit	Level 2 Pass	Level 2 Merit	Level 2 Dist
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	C.1M6 Describe strengths and weaknesses of both their user interface and project	C.2P6 Explain the strengths and weaknesses of both their user interface and project plan, summarising deci-		

Wider Reading List

- UX For Dummies, By Kevin P. Nichols



- https://moqups.com/
- https://www.usability.gov/what-and-why/user-interface-design.html
- https://en.wikipedia.org/wiki/Principles_of_user_interface_design
- http://bokardo.com/principles-of-user-interface-design/
- https://www.bbc.com/education/guides/zwb4jxs/revision/1
- https://www.mockplus.com/blog/post/bad-ui-design-examples
- https://www.vrroom.buzz/vr-news/guide-vr/20-examples-vr-user-interface-design-part-1

Homework

Two homework Tasks per week will be set throughout work undertaken during the Unit.

Tasks will vary to include:

- Researching specific aspects of the Unit content
- Producing Revision materials such as posters/mind maps
- Practice examination questions
- Online revision tasks