Long-term planning

Digital Information Technology - Year 10

Year 10	Autumn term 1	Autumn term 2	Spring term 1	Spring term 2	Summer term 1	Summer term 2
	Students will know that	**Students will know that**	**Students will know that**	**Students will know that**	**Students will know that**	**Students will know that**
	A user interface is the software that sits between humans and devices that allows the user to operate a device to carry out tasks. Basic user interfaces are text interfaces, form interfaces, menu interfaces. Complex user interfaces include GUI (Graphical User Interfaces), sensor user interfaces, speech user interfaces. When choosing a user interface, it's important to consider factors such as performance, ease of use, user requirements, user experience, accessibility and storage space. Hardware and software of a device will impact the type of user interface that can be used and the features it has. Accessibility refers to the design of a product for users who experience disabilities. Devices are built with accessibility options so that users can change the way that the user interface looks, feels and sounds to suit their needs. Design principles are rules that should be followed when	Before a product is created, it is often sketched out on paper. A sketch is a rough, often unfinished drawing that will help you to generate ideas. This quick sketch will help decide if the initial ideas are going to work. A storyboard is a tool that be used to design the visual aspect of a user interface. Although it includes sketches, it gives more information about the system that is being developed. A storyboard illustrates the main events or sequences that will happen while a user views or interacts with a multimedia object such as a video or website. Software requirements are a list of tools the software should contain to meet the project requirements and the user interface design. System hardware is the hardware requirements to run the software on your computer. Peripheral hardware is the devices used to access the software.	Data is a collection of numbers or text that is stored and processed by computer systems. Data is a series of numbers or letters that has no structure or context and which by itself has no meaning and has not been processed. Data is often structured by splitting it into fields and records in a table format. Fields divide data into groups of all the same type, such as people's names, phone numbers, etc. A record is one complete set of fields. This typically makes up the rows within a table of data. There are many different ways that information can be represented and the situations in which it might be used. Qualitative information is information that describes qualities that cannot be represented numerically. Quantitative information is information that can be	In some situations, you need to combine several tests. Logical operators are used to do this. Using logical operators, it is possible to use the IF function to create formulae that have two or more tests. Large data sets can sometimes make more sense if they are sorted in a particular order. Spread sheet software can do this. A filter can be used to display data that matches a certain criteria, making it easier to read only the appropriate data. Outlines can be used to group data, hiding the details, while the subtotal function allows you to apply different calculations to the data. Macros allow the automation of various actions in a spreadsheet. A macro records you completing a task. Once recorded, it can carry out the task automatically for you. When dealing with a large amount of data, or data that is split into clear divisions, it is often useful to put that data into different worksheets.	Most organisations use technology every day to gather and process information that can be used to help the organisation function. Modern technologies make it possible for organisations to work increasingly flexibly, allowing devices to be connected as needed. Devices that are connected together form a network. As an alternative to storing files and folders on a PC or storage device, they can be stored remotely. This is called Cloud storage. Files and data are stored and managed on a remote server in a different location. Cloud computing is a collection of different services that are available to users. It can include online software. The main benefit is that data can be accessed from anywhere with an internet connection. There are many different platforms available for an organisation's employees and stakeholders to use.	There are many online tools that teams can use to promote collaboration. These also help managers monitor the activities of their teams. Scheduling and planning software can be used to manage and work within teams. Organisations use a wide selection of communication technologies to connect with their stakeholders, from their corporate websites to social media platforms. Computers should be capable of being accessed and used by everyone, but some users have physical challenges that make aspects of computer use difficult or impossible. Technologies that help users overcome some of these challenges are becoming increasingly available. Modern technologies impacts on organisations in several ways, including cost, time, staff and security. Digital technologies have made communication and working together in organisations much more efficient and accessible.

	designing a product. This can include rules about colours, rules and the language used. House style refers to a set of rules that an organisation follows on all of their documents to ensure that they are consistent. 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. Waterfall methodology required a 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. Projects usually start with a project brief which can be broken down into different parts. This can be in the form of a task list, graphical descriptions, written descriptions or a combination of these. A mind map is a type of graphical description which has a central idea in the middle and branches off it representing different ideas for different sections of the project. It is important to consider the target audience at the very start of a project to ensure	Hardware requirements are dependent on the software chosen. You need to consider the advantages and disadvantages of a chosen methodology. It is important to review the user interface effectively. You must consider how the project requirements have or have not been met. It is important to check how suitable the user interface is for the users who will be using it. It should be easy to use by the target market. The interface design should be effective. Consider colour choices, font size/style, appropriate language, right amount of information, layout.	measured and best represented by numbers. Graphs and charts are commonly used to summarise numerical information. This can make it easier to spot trends and changes in sales amounts. Infographics combine several methods of presenting complex information, such as graphs, diagrams, images and tables, in a brief, clear and visual way. Validation and verification are two different things. Validation involves testing that input data conforms to certain specified rules Verification ensures that the input is checked more than once. There are many different validation methods, such as range check, type check, presence check and length check. Verification can either be checked automatically by a computer, or manually by a human. Computer verification usually entails entering the information more than once, and the computer will check they match before proceeding. A form of human verification is proofreading. This is where somebody else reads the information to check for accuracy. This is not perfect	This can be done using formulae that pick up data in other worksheets. Conditional formatting gives the user the ability to have formatting that changes automatically depending on the contents of a cell. This can be used to highlight important information, such as values that fall above or below certain limits. Data summaries are a useful summary of important information. There are several ways that data can be summarised, such as totals, percentages and counts. Information summaries can be useful in several different situations. Different people within an organisation often require different data. Presenting the data on the dashboard clearly and effectively is important so users can understand and interpret the data. The dashboard needs to be appropriate for its intended users. Form controls allow the user to have some control over how the data is used or how it is displayed. A dropdown menu can be used to allow the user to select from a relatively small number of valid entries. This also ensures only a valid input can be made.	Many services use cloud technologies to store important data, which can be synchronised between different devices. Cloud and traditional services can be used together. There are several different factors that organisations will have to consider when choosing cloud technologies that will work for them and their situation. There are possible drawbacks that an organisation must consider in relation to cloud technologies. These include set up, storage, downtime and performance considerations. Collaborative technologies enable staff within organisations to work together more effectively by allowing them to communicate and share information and documentation more easily.	Devices like smartphones have changed the way we communicate and entertain ourselves. Technology impacts the way you feel about yourself and the world around you. Technology can have both a positive and negative impact.

	that the system is suitable and will be accepted by the target audience. User requirements are what the client wants the system to do or contain, such as styles to be used, items required on screen, what tasks the user should be able to complete. It is important to consider if any users have accessibility needs and the possibility of other users having accessibility needs in the future. After project requirements have been established, you need to look at potential barriers that could prevent you from achieving them. You should plan what constraints you face before you start a project. Recommendations can then be made as to the viability of the project. Constraints include Time, resources and security. Task dependencies are the previous tasks that should be completed before a new task can start. Project timescales need to be considered to decide the right length for a project and help decide whether an existing project plan is achievable. The overall timescale is the amount of time available to complete a project from the		as the proof reader could also miss errors. Organisations collect and analyse data to allow them to make decisions and predict the impact changes can have on a business. There are two main categories of data collection methods. Primary data that is collected directly from the original source and secondary data that is collected by organisations other than the people using the data. Primary data is usually more accurate, as the collector has more control over the data collected. There is an increased cost to consider. Secondary data is usually more cost effective, but may not be as accurate or relevant. Quality information is needed to make good decisions. Things to consider are the source/collection method, accuracy, age, completeness, amount of detail, format/presentation and volume. Data modelling can help organisations understand the impact different decisions might have on their business. A wide range of businesses use data models to help them plan and run their business. Modern life involves the recording of large quantities	Spreadsheets have many features that help present data in ways that make it more meaningful. Pivot tables, conditional formatting and selecting data ranges are useful when creating dashboards. Visual presentation methods, such as graphs and charts, provide an effective way to present numerical data and allow trends to be more easily spotted. Graphs and charts created within a spreadsheet are dynamic, so if the data changes, the chart automatically changes to reflect the new data. Dashboards are the “front window” of the system. They need to look professional and clear to emphasis the most important information in a way that can be understood easily. Font size, style and colour should be taken into consideration. A dashboard should allow the user to draw meaningful and accurate conclusions from the data presented. The way information is presented in the dashboard can have an impact on how that information is interpreted. Poorly presented information may make understanding what the dashboard shows difficult.		

	initial start date to the completion date. Milestones are stages of a project by which time something should have been developed for a stage when a decision will be made. Milestones occur throughout a project. A Gantt chart is a visual diagram. It uses different blocks to represent the amount of time each task will take. A design specification will help you explain to others what your new system will consist of and how it is going to work. This needs to meet the user, input, output and accessibility requirements. It is important to design a user interface that will allow users to quickly learn its features to complete tasks.		of data about many aspects of people's lives. There are many threats related to the data collected by organisations about individuals. These threats can range from minor to major. Personal data collected by systems such as bank transactions, mobile phones and loyalty schemes are protected by data protection legislation. A Dashboard is a display of important information, using visual and other methods of presentation. The data is refined, manipulated and presented to make it easier to understand. Dashboards rely on data. In many situations that data comes from a secondary source and needs to be imported into the spreadsheet that feeds the data to the dashboard. Data can usually be imported straight into a spreadsheet but there are many formats where the data needs to be structured by delimiting it. Spreadsheet software can be used to create a dashboard. Spreadsheets use formulae to do a wide range of calculations, including simple arithmetic through to complex statistical and engineering functions.			

			A spreadsheet file is split into a number of worksheets. Each worksheet has a table format with columns identified by letters and rows identified by numbers. The box at each intersection of a row and column is called a cell. Each cell in a spreadsheet can contain text, numbers or formulae that can carry out calculations automatically. Each cell has an "address" which consists of the letter of its column followed by the number of its row, such as A1. A function is a type of formula that carries out a calculation. Spreadsheets have many different functions that can be used, such as SUM, AVERAGE, MIN, and MAX. Functions can be used to make decisions about how a formula works, for example, to choose different calculations using the IF function. Functions can also be used to lookup items and count items with a given criteria. Dashboards often need to extract specific information from a lot of data; therefore, the ability to look up individual data items from a large data table is a very useful feature.			
	Students will know how	**Students will know how**	**Students will know how**	**Students will know how**	**Students will know how**	**Students will know how**
	To review a user interface.	To use a sketch that represents how the user interface will look.	To process Data so that it becomes information and is therefore meaningful.	To use logical operators that allows a function to combine several tests.	To identify the difference between a fixed network and an ad hoc network and the	To explain the benefits of collaborative technologies and how version control can

	To consider design principles such as the use of colour, font style and sizes, text elements and layout to create user interfaces that allow a positive user experience. To consider user perception when creating user interfaces to allow a positive user experience.	To show a sequence of dynamic events using a storyboard. This will also represent how the finished product will look in a basic way. To identify the software and hardware requirements for a project. To complete a project proposal, plan timescales, design an initial user interface of four screens and develop a working prototype. To select appropriate project planning tools that are suitable for the project brief given. To create a user interface that takes into account all the project planning techniques learnt. To constructively review a user interface that takes into account all the project planning techniques learnt. To make suggestions that could improve the user interface.	To identify the most appropriate way of representing information and understand the advantages and disadvantages of presenting data in a variety of different ways. To create a graph that will summarise data, making it easier to understand. To create an infographic that provides a useful and quick summary of important information. The difference between data verification and data validation and how each is used. To collect both primary and secondary data using a variety of methods. To identify how useful collected data is based on the collection method. To check the quality of information gathered and its usefulness. To use data modelling to make a business decision. To identify how data can be collected and potentially used for fraudulent purposes. To import data in a variety of formats, using delimiting where necessary. To construct a formula that will carry out a calculation,	To sort and filter large data sets so that only required information is displayed. To wrote a Macro that will carry out a task automatically. To link different worksheets using formulae that reference these. To use conditional formatting to automatically format a cell based on given criteria. To summarise data so that only the important parts are displayed. To summarise information so different people within an organisation can view only the information that is pertinent and useful to them. To create form controls and dropdown menus to give the user convenient ways of choosing data whilst ensuring only valid entries can be made. To create a pivot table that will rearrange data in a way that makes it easier to understand. To create a dynamic graph or chart that will visually present numerical data and highlight any trends. To create a professional looking dashboard that presents data in an easy to read and understand format.	security issues with both types of network. To identify the various issues that affect network availability. Cloud storage helps users to complete tasks, how it works, its features, usage and when it is available. Cloud computing works compared to traditional pc-based computing. Platform and services selection affect cloud technologies. To synchronise content across different devices, either when online or offline working. To identify the benefits and drawbacks of disaster recovery policies. To consider maintenance, set up and performance considerations when identifying which cloud technologies to use.	solve the problem of several people working on the same document at the same time. Scheduling and planning software can allow several people to work on different parts of the same project. Stakeholders are provided information using communication technologies. This can be via private or public communications To consider accessibility and inclusivity needs when designing a user interface, and when considering the needs of employees. The impact of infrastructure on an organisation has many factors to consider, including costing, training for staff, implementing and testing time and running costs. Digital technologies have made it easier for organisations to be inclusive, employing staff over a wide age range, who may have health needs, additional needs or come from other cultures. Technology can impact on an individual's wellbeing.

			ensuring that the rule of BIDMAS is followed. To copy formulae using both relative and absolute cell referencing. To use a function within a spreadsheet to automatically complete a calculation.	It should allow the user to draw meaningful and accurate conclusions from the information presented.		
	Vocabulary and the concepts they link to	**Vocabulary and the concepts they link to**	**Vocabulary and the concepts they link to**	**Vocabulary and the concepts they link to**	**Vocabulary and the concepts they link to**	**Vocabulary and the concepts they link to**
	User interface, software, hardware, text interface, form interface, menu interface, GUI, WIMP, sensor interface, navigation, speech interface, intuitive, user experience, accessibility, operating systems, emerging technologies, CPU, RAM, embedded systems, motor needs, cognitive needs, demographics. Mind map. Constraints, task dependency, project timescales, milestones, gantt chart, design specification	Sketch, storyboard – design elements. Sequence Hardware, software, peripheral – system requirements Prototype – user interface creation	Data, information, fields, record, database, spreadsheet – characteristics of data. Qualitative information, quantitative information. Graph, chart, table, sparklines, infographics – representing data. Verification, validation, valid, invalid – data suitability. Primary data, secondary data – data collection. Data modelling Fraud – data protection laws Dashboard Delimiting – data Row, column, cell, formulae, replication, relative addressing, absolute addressing.	Logical Operators – AND, OR, NOT. Filter, outline, subtotal – interpreting data. Macro – task automation Conditional formatting Summarise – data and information. Form control, dropdown, pivot table. Charts, graphs, sparklines, dashboard – data presentation.	Network, ad hoc network, Bluetooth, Personal Area Network (PAN), encryption, tethering, personal hotspot, USB – connectivity. Server, downloading, uploading, synchronising – data storage.	Stakeholders, downtime, geo-data – platforms and services. Disaster recovery policy. Version control. Collaboration. Accessibility, inclusivity. Infrastructure. Wellbeing.
	Assessment	**Assessment**	**Assessment**	**Assessment**	**Assessment**	**Assessment**
	A4 - Assessment of work	Creating an interface design PSA	Assessment of work – Data collection methods	Assessment of work – Data manipulation Create a dashboard	Assessment of work – Modern Technologies and their impact PSA	Assessment of work – Modern Technologies and their impact

	Diversity & development of cultural capital	**Diversity & development of cultural capital**	**Diversity & development of cultural capital**	**Diversity & development of cultural capital**	**Diversity & development of cultural capital**	**Diversity & development of cultural capital**
	Spiritual – use of imagination and creativity and reflective of their experiences Moral – Accessibility Social – class/group discussions	Spiritual – use of imagination and creativity and reflective of their experiences Moral – Accessibility Social – class/group discussions	Spiritual – use of imagination and creativity and reflective of their experiences Moral – Accessibility Social – class/group discussions	Spiritual – use of imagination and creativity and reflective of their experiences Moral – Accessibility Social – class/group discussions	Spiritual – use of imagination and creativity and reflective of their experiences Moral – Accessibility Social – class/group discussions	Spiritual – use of imagination and creativity and reflective of their experiences Moral – Accessibility Social – class/group discussions
	Cross-curricular opportunities and enrichment	**Cross-curricular opportunities and enrichment**	**Cross-curricular opportunities and enrichment**	**Cross-curricular opportunities and enrichment**	**Cross-curricular opportunities and enrichment**	**Cross-curricular opportunities and enrichment**
	Design and Technology – Design principles Art – Colour schemes Computer Science – Decomposition Business Studies – planning a project	Design and Technology – Design principles, prototyping. Art – proportion, placement Computer Science – hardware, software, programming (sequencing) Business Studies – planning a project	Safer Internet Day Computer Science – Data and information Business Studies – using and interpreting data.	National Careers Week Computer Science – Data and information. Sorting. Business Studies – using, displaying and interpreting data.	Computer Science – Networks and connectivity, software, staying safe online. Business Studies – using, displaying and interpreting data.	Alan Turing Day Computer Science – Networks and connectivity, software, staying safe online. Business Studies – using, displaying and interpreting data.