Higher Computing Science Test 1

# What to Know

|  |  |
| --- | --- |
| Data Representation | * How a bit-mapped graphic is stored in memory |
| Bit mapped graphics are stored as an array of 2D pixels. Each pixel is stored using a certain number of bits, known as the bit depth. This dictates the total number of colours that can be used. The total number of pixels is known as the resolution. | |
| HTML | * Definition and purpose * Errors in code * Metatags * Output from code |
| HTML stands for HyperText Markup Language. Its main purpose is to create the content of webpages.  Metatags consist of keywords and descriptions about webpages and that will reflect its content. Sometimes information about the author of the webpage can be found here. Metatags are inserted into the head section of a HTML document.  In your test will be asked to identify any errors in HTML code which may prevent a webpage from displaying correctly. | |
| CSS | * Definition and purpose * Rules * IDs and Classes * Inline, Internal and External stylesheets |
| CSS stands for Cascading Stylesheets. Its main purpose is to create the format or layout of webpages.  Rules consist of a selector and declaration:    AMERICAN SPELLING IS USED!   |  |  | | --- | --- | | **Description** | **CSS rule** | | Style of font | font-family: Arial; | | Size of font | font-size: 12px; | | Colour of font | color: blue; | | Alignment of text | text-align: center; |   ***Classes***  The class selector selects elements with a specific class attribute.  It is represented using a . symbol.    ***ID***  The id selector uses the id attribute of an HTML element to select a specific element.  The id of an element should be unique within a page, so the id selector is used to select one unique element!  It is represented using a # symbol.    ***Internal***  An internal style sheet may be used if one single page has a unique style.  Internal styles are defined within the <style> element, inside the head section of an HTML page.    ***External***  External style sheets are used to format two or more webpages. Each page must include a reference to the external style sheet file inside the <link> element. The <link> element goes inside the head section.    Any CSS is then created in a separate file.    ***Inline***  An inline style may be used to apply a unique style for a single element.    ***Priority***  If one or more styles are applied to one tag then the following priorities are applied:   1. Inline 2. Internal 3. External   For example, if an external stylesheet applies a red background to all h1 elements, but an inline blue background style is applied to a specific h1 element then its background would be blue.  Similarly, the following priorities are applied:   1. ID 2. Class 3. Tag | |
| Scripting | * Client Side Scripting * Server Side Scripting |
| Client side scripting refers to program code that is embedded in documents viewed on the user’s computer. Programs or scripts will be run by the user’s browser or similar software. Often used to ensure valid data has been entered into forms before being sent to servers to be processed.  Server-side scripting refers to program code that is executed by the server. Data validation is always carried out by server-side scripting. Server side scripting occurs when data is sent from a client device to the server, where it is processed before a result is sent back to the client. | |
| Media Types | * Lossy Compression |
| Lossy compression will usually result in a smaller file size because data is permanently removed. Lossy compression can be applied to media types such as video, audio, and images. In video there is a reduction in accuracy of the stored video footage as approximations are used to reduce the detail of the image. There is also a reduction in the number of full frames stored as only changes between frames are stored. In audio, sounds not audible to humans are removed from the sound track data. | |
| Structures & Links | * Search engines and returning results |
| A program known as a spider (or crawler) goes to every page on every website which wants to be searched and reads it using metatags/title/body tags. Data is passed to a program that creates a huge index from the pages that have been read called search engine results page (SERP). Program compares it to the entries in the index and returns the results to you.  Search Engine Optimisation (SEO) consists of a set of techniques used to increase the amount of visitors to a website by obtaining a high-ranking placement in the SERP. Search engines use sophisticated algorithms to decide the order in which pages are placed in the index. Search engine providers also take money in return for placing sites higher on the list, known as sponsored sites.  SEO ranking techniques consist of:   * backlinks from trusted websites, ie well established and respected sites covering similar topics. * Good use of multimedia in the form of video and images with correct use of alt tags. * The description meta tag is very important and should be a concise and accurate description of the content of your webpage. * Ensure keywords held within the keyword metatag are used often in the main body of content and in the page URL and title | |
| Testing | * Usability testing * Beta testing   + Open   + Closed |
| The term usability describes how useable software is in relation to its intended purpose. Designers are encouraged to consider learnability, memorability, efficiency, error reporting/handling and customisability. When undertaking usability testing, developers can ask users to carry out a series of tasks that they could provide feedback on. Usability testing will involve systematic observation under controlled conditions.  Beta testing is the second phase of testing in which a sample group of the target audience (end-users) tries the product out. Beta testing is "pre-release testing”. Developers release either a closed beta or an open beta:   * **Closed beta**: Released to a select group of individuals for a user test. Invitation only * **Open beta**: Distributed to a larger group up to the general public and anyone interested | |
| Computer Architecture | * Cache memory * Operating system functions |
| Cache memory involves storing frequently accessed data/ instructions. This is a faster access memory because it is stored on the same chip as the processor and therefore reduces the need to access slower main memory. Cache memory could be used to store a video that was watched on website until the computer is switched off in case the user wishes to watch it again.  An operating system is a collection of programs that control computer hardware and software resources. There are 6 different operating system functions:   * **Managing Processes** – dividing a program to run on more than one processor at a time; giving a different priority to different processes * **Memory Management** – managing internal memory between applications open * **File Management** – ensures enough space in memory to load files; deals with requests to transfer data to backing storage; retain information on file permissions eg block or allow access * **Input/Output Management** – handles all input and output to attached devices; ensures device drivers are present and up to date * **Interpreting User Commands** – consists of a layer that makes sure system responds as the user expects eg when a keyboard key is pressed * **Resource Allocation** – combines both managing processes and memory management to ensure enough processor time and RAM is allocated to applications | |
| Types of User | * Expert * Novice |
| Novice and expert users have different needs, which increase the complexity of developing a user interface. Novice users will require a simple graphical interface to navigate from one screen to another and more help facilities. Expert users are likely to be more familiar with navigating different areas of the interface and will need quicker alternatives built in to the interface. | |