

## Criterion I: Planning the Chosen IT Solution

10 marks

- Will the product provide an IT solution for the problem described in criterion G?
- Is there a realistic plan and time line for managing the project that includes the gathering of necessary information, the making of the product and the testing process?
- Have all of the beta testers and end-user testers been identified?
- Is there a complete design (for example, storyboard, sketches, layout) for the product?
- Have you included sketches, diagrams, charts, screenshots and other evidence in your report that support your account of the development of the product?
- Is there a complete description of all the software (company, title and version) you have used in the making of the product?
- Is there a complete description of all the hardware (model and specifications) you have used in the making of the product?
- Is there a full description of how all of the data used in making the product was collected, including all relevant sources?

## I Planning the Chosen IT Solution

The solution is the first of those described in the previous section: a web site intended as a guide through the specific and general relativity option of the IB Physics course. This is the option which I thought would offer the wider opportunities of use.

### Collecting information for the content: (Time scale: September)

This is available to me in the form of lesson notes, text books and other material from the school library.

### Making the product: (Time scale: September-October)

The design of the web page will be simple, using tables for layout. I have chosen not to use frames, as I had no necessity for them and some browsers (particularly text based ones) tend to have difficulties displaying them I chose a well laid out, simple page design as this often looks a lot better than a complex one that is badly laid out; I would also prefer spending more time on the content of the website, than the design. Also, the usage of anything other than HTML, CSS or JavaScript has been omitted, Java, Shockwave, Flash or other such tools often require browser Plugins, which may be tedious to install, and may not work at all with some OS'. It is also very tricky and time consuming to create a well presented web site with those tools.

Each page will be laid out similarly, with one common background colour (green) and a table of 80% width and a white background colour, aligned to the centre in which all images and text will be displayed. This white table will have several smaller tables within it, to allow text to be indented slightly, depending on whether it is a title, a sub-title, or explanation. A picture of this basic layout can be found in my log book in the appendix.

Important statements as well as sample questions will have their own tables with a different background colour, so that they stand out in comparison to the rest of the page. The text colour will most commonly be black, with different colours for links. I have chosen Verdana as the standard font; Verdana is common but not in universal use do backup fonts will be provided; including Tahoma, Arial and Helvetica.

In total there will be 13 separate pages, each with a 'next', 'previous' and 'home' (to the index page) link at the top and bottom. These pages include a table of contents, a sample IB data booklet, a reference page, an 'about' page, an answer page, and a page for each section I am planning on explaining. Those pages will also have sub-sections when relevant, to explain individual concepts more precisely. (Please see Appendix for screenshot of index page).

### Hardware:

I will primarily be working on two computers, a PC running on Intel's 686 architecture and familiar software; and an iMac to work on the project during school time.

Details of the hardware I will need to produce and test the web site are shown in the table below.

<b>Required Hardware</b>	
<i>PC</i>	
Central Processing Unit	Pentium II, 266 MHz
RAM	288 MB Physical, 512 MB Swap
Hard Drives	Maxtor, 5200 RPM, 10.3 GB, Format: BSD Fast File System
	Fujitsu, 5200 RPM, 4.2 GB, Format: 2 <sup>nd</sup> Extended File System
<i>iMac</i>	
Central Processing Unit	PowerMac G3, 300 MHz
RAM	192 MB Physical, 193 MB Virtual
Hard Drive	19.7 GB, Format: Macintosh Hierarchical File System

Apart from the hardware listed above, Iomega zip drives as well as zip diskettes will be used to transfer data between the two computers. This will involve using VFAT formatted 100 MB Zip diskettes, that both computers are capable of accessing and reading.

**Software:**

The table illustrated on the below illustrates all the software needed for the creation of the web site; including an HTML editor and an image editor to create a web site. As well as this, other software will be used to add a few less common features to the web site, such as displaying graphs and formulae.

<i>Required Software</i>		
<b>Description</b>	<b>Name</b>	<b>Version, Company<sup>1</sup></b>
Operating Systems	MacOS	Version 9.0, Apple
	FreeBSD	Version 4.3-Release, BSD Licence
Word Processors	OpenOffice	Version 5.2, GPL
	Word	Version 2001, Microsoft
Image Editor	The Gimp	Version 1.2, GPL
HTML Editor	Vi Improved	Version 5.0, gPL
Miscellaneous	LaTeX	Version 3.1459, GPL
	Latex2html	Version 2000.1 Beta, GPL
	GnuPlot	Version 3.7.1 Stable, GPL
	HTML Tidy	Version 04aug00, MIT Licence

**Word Processors:**

These will be used for writing the text, and spell-checking. Both OpenOffice and Word handle Microsoft Rich Text Format (RTF) documents. I have chosen this format as Unix and MacOS use different characters to note certain instructions (such as the ending of a line) in normal text documents, which causes problems when porting files one system to another. Both choices, OpenOffice and Word, have the advantage that they are already installed on the machines I am intending to use.

**Image Editor:**

The Gimp will be used for creating images. It offers support for compressed image formats, suitable for a web page. These include portable network graphics (PNG), and Jpeg (JPG) images.

**HTML Editor:**

I have chosen Vi Improved to be my standard HTML editor, as I have configured it to offer syntax highlighting, which can help produce a web site, and also helps me avoid errors in code. As well as this, I may have to resort to SimpleText whilst modifying code on the Macintosh, although this will only seldom be done, due to the problems while converting Unix text documents to Macintosh text documents, as pointed out earlier on.

**LaTeX:**

I am experienced in using TeX for layout purposes, and consider it the easiest solution to implement formulae into my HTML document. LaTeX files can be converted to HTML using the program LaTeX2HTML, which will convert to images all characters that cannot be displayed in HTML (such as the Greek alphabet). This will be more efficient than attempting to learn to use a graphical tool to display formulae.

**GnuPlot:**

This is the tool I am intending to use for displaying graphs, of which I will then take snapshots, to be shown as images on the web page. These graphs can ease the understanding of some of the points.

**HTML Tidy:**

This is a useful program provided by the World Wide Web Consortium (W3C) that detects any syntax errors in HTML documents, and tries to convert them to the W3C standards used by most popular web browsers. Most of the HTML documents I am planning to write will be created in a text editor, meaning that such errors could often occur. Most of the browsers with which I am planning to test my web page can handle such erroneous pages quite well, so I would not be able to detect any errors in any other way.

**Communication Technologies:**

In this case, web browsers are to be used for testing and accessing the product once it has been set up on a web server. Having a web site that consists of HTML documents, a web browser will most commonly be used to view it; and the table below illustrates all the web browsers I am intending to use to test the product with:

<i>Communication Technologies</i>		
Description	Name	Version, Company
Web Browsers	Opera	Version 5.0 Beta 3, Opera Software
	Mozilla	Version 0.9.5, GPL/LGPL/MPL
	Internet Explorer	Version 5.0, Microsoft

The software listed above includes the most common items used with the internet, Mozilla being the probably most popular Netscape derivative, and Internet Explorer being the standard browser delivered with a popular operating system. Opera is a convenient third option, being the browser I personally use most.

I am not planning to do extensive testing with Netscape Navigator version 4.7 and Lynx, but will use them to make sure that the pages show up appropriately.

**Network Technologies:**

To make the web site available to the public, a number of network technologies will be used; primarily the HTTP server used to allow the web site to be available on the internet, but also File servers, used for back-up purposes. The specific network technologies used are:

<i>Network Technologies</i>
AppleTalk File Server
Apache HTTP Server, version 3.3.19, GPL

The file server is an essential part of the intranet of the school, and runs from the school's local server. I can make use of this by saving all relevant files to this project in my own personal folder, located on this server, to which no-one has access to other than me and system administrators. The disk on which I will save my documents is regularly backed up on tape, therefore it serves as an ideal backup location, other than local hard drives and Zip diskettes, for all files I will create.

The HTTP Server is also located on the school's server, and allows my web page to be made available over the internet. It runs on Apache HTTP server software which is thought to be relatively appropriate for HTTP servers. The school has a direct connection to the internet, meaning that it should be connected constantly unless it is being maintained. Its registered domain name makes it accessible through most public DNS servers.

**Evaluation of the plan:**

I thought the plan worked out quite well. By intending not to have an extremely complex web site, I had enough time to concentrate on the actual contents of the page, and assure that everything made sense and was correct, which was my main aim of this product. Though the product had been done on time, my plan lacked an adequate time-line, as a result of this, the write-up ended up being delayed by a considerable amount.