Chapter 4: Software test

36 /38

(12)

1.

The computer in the ticket machine has an operating system.

One function of the operating system is to provide an interface for the user.

State **three** other functions of the operating system.

Function 1 ~~User password peripherals~~ Manage user password and accounts

Function 2 Multitasking

Function 3 ~~Providing GUI, CLI, WIMP or GUI interface~~ peripherals and drivers

[3]

2.

A compiler and an interpreter are two different types of translator.

(a) One similarity between a compiler and an interpreter is that they both translate high-level language into machine code.

(i) Give **one** other similarity between a compiler and an interpreter.

both are necessary for executing code. Both return errors.

[1]

(ii) Explain **two** differences between a compiler and an interpreter.

- Compilers return error after code is executed, interpreter returns error when found

- compilers create executable file when compiled, interpreter executes directly.

- compiler for low-level languages, interpreter for higher-level languages

[4]

3.

Identify **one** other type of translator.

Assembler [1]

4.

Programs can be written in a low-level language.

(a) Identify **three** features of a low-level language.

Feature 1 runs quickly

Feature 2 requires memory management

Feature 3 does not have many pre-existing data structures [3]

(b) Give **two** examples of a low-level language.

Example 1 C too / machine code

Example 2 assembly [2]

(c) Give **one** drawback of writing programs in a low-level language, instead of a high-level language.

Development time is longer, memory leaks and ~~unsafe~~ potentially unsafe ~~memory management~~ memory management. [1]

(d) A low-level language needs to be converted to binary before it can be processed by a computer.

(i) Give the **8-bit binary** value of the two denary values:

128 64 32 16 8 4 2 1

1 0 1 1 0 1 0 0

1 1 0 1 0 0 0 1

180 0b10110100

201 0b11010001 11001001 [2]

Working space

128 64 32 16 8 4 2 1

1 1 0 0 1 0 0 1

5.

Annie writes a paragraph of text as an answer to an examination question about programming languages.

Using the list given, complete Annie's answer by inserting the correct **six** missing terms. Not all terms will be used.

- Assembly
- Converter
- Denary
- Hexadecimal
- High-level language
- Low-level language
- Machine Code
- Source Code
- Syntax
- Translator

The structure of language statements in a computer program is called the Syntax. A programming language that uses natural language statements is called a High-level language. When programs are written in this type of language they need a ~~interpreter~~ translator to convert them into machine code.

A programming language that is written using mnemonic codes is called assembly language. This is an example of a low-level ~~code~~ language.

[6]

6.

State **three** functions of a browser.

1 allows user to save bookmarks

2 allows user to use search engine like google

3 allows user to view webpage with given URL

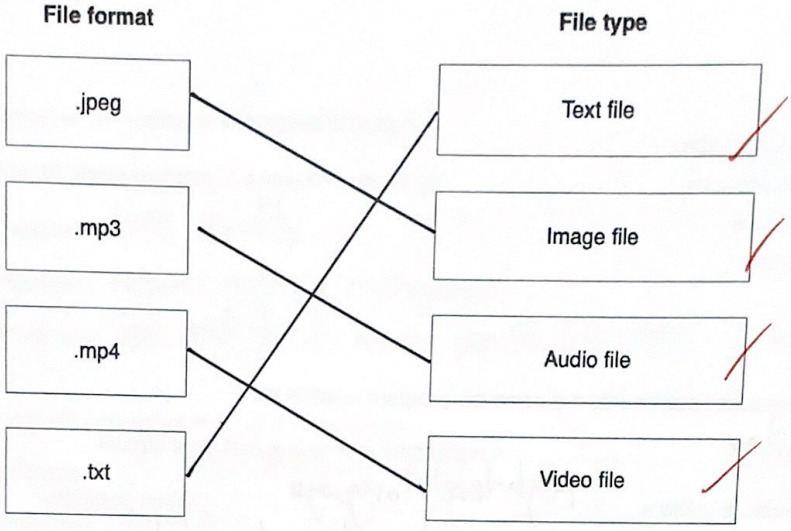
[3]

7.

(a) Computer files can be saved in different file formats.

Four file formats and **four** file types are given.

Draw a line to match each file format to the most suitable file type.



[3]

(b) Jamelia wants to store an image file. The image has an 8-bit resolution and is 150 pixels by 100 pixels in size.

Calculate the file size of the image. Give your answer in kilobytes (kB). Show all of your working.

8x150x100 = 120 000

120 000 ÷ 1000 = 120 kb

$\frac{120}{8}$ = 15 kb

120 15

File size ..... kB

[3]

8.

Translators, such as a compiler and an interpreter, are used when writing and running computer programs.

Describe how a compiler and an interpreter translates a computer program.

Compiler

- Compiles source code into executable file
- att example of compiler
- executable file of machine code that can be executed directly
- returns error during compilation, file cannot be executed

Interpreter

- interpret 1 source code by line by line
- used for lower level languages
- executes instructions line by line
- execution stops when error found on line
- example of Python IDLE
- used for higher level languages

6/[6]