2.10 Translators and Integrated Development Environments (IDEs): Test Pack

OCR J277 · Calculators not allowed · about 20 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Source code must be translated into a form the computer's processor can execute directly.

(a) Which term describes code written by a programmer, before it has been translated? **(1)**

- ☐ A) Object code
- ☐ B) Source code
- ☐ C) Byte code
- ☐ D) Pseudocode

(b) Which term describes the code that is ready to be executed directly by the CPU, after translation? **(1)**

- ☐ A) Source code
- ☐ B) Flowchart
- ☐ C) Object code
- ☐ D) Comment

(c) Which of these is an example of a low-level language? **(1)**

- ☐ A) Python
- ☐ B) Assembly language
- ☐ C) Java
- ☐ D) Visual Basic

(d) Which of these is an example of a high-level language? **(1)**

- ☐ A) Machine code
- ☐ B) Assembly language
- ☐ C) Binary
- ☐ D) Python

(Total for Question 1 is 4 marks)

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2 State what an assembler does.

(Total for Question 2 is 2 marks)

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3 A student is learning to program and wants to test small sections of code and see errors immediately as they type, without waiting for the whole program to be checked.

(Total for Question 3 is 3 marks)

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4 Explain how a compiler translates a program, including what happens if the compiler finds a syntax error.

(Total for Question 4 is 4 marks)

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5 A student writes the following single line of code, which contains a syntax error (a missing closing bracket): OUTPUT ("Well done"

(a) Describe what happens when this line is translated using a compiler. **(2)**

(b) Describe what happens when this line is run using an interpreter. **(2)**

(Total for Question 5 is 4 marks)

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Mark scheme · 2.10 Translators and Integrated Development Environments (IDEs): Test Pack

Question 1

(a) B cao **B1**

(a) Answer: B) Source code

(b) C cao **B1**

(b) Answer: C) Object code

(c) B cao **B1**

(c) Answer: B) Assembly language

(d) D cao **B1**

(d) Answer: D) Python

Question 2

an assembler translates a program written in assembly language (using mnemonics, e.g. LDA, ADD, STA) into machine code, oe **B1**

it typically translates on a one-to-one basis - each assembly language instruction becomes one machine code instruction, oe **B1**

Answer: An assembler translates assembly language (mnemonics) into machine code, usually one instruction at a time.

Question 3

interpreter, cao **B1**

because it translates and runs code line by line, so the student gets immediate feedback/sees an error as soon as that line is reached, oe **B1**

which makes it easier to test and fix small sections of code one at a time while still learning, oe **B1**

Answer: An interpreter, because it gives immediate line-by-line feedback, which suits testing and fixing small sections of code while learning.

Question 4

the whole source code is read and translated together, checking for syntax errors, oe **B1**

if any syntax errors are found, none of the program is translated/run; the compiler lists/reports the errors it found, oe **B1**

if there are no errors, an object code (executable) file is produced, oe **B1**

this executable file can then be run/distributed and executed directly, without the compiler or the original source code needing to be present again, oe **B1**

Answer: The compiler reads and checks the whole program together; if there are errors, none of it runs and the errors are reported, otherwise an executable file is produced that can be run independently afterwards.

Question 5

(a) the compiler translates the (whole) program and detects the missing bracket as a syntax error, oe **B1**

(a) because there is an error, no object code/executable file is produced - the program will not run at all until the error is fixed, oe **B1**

(a) Answer: The compiler detects the missing bracket as a syntax error and produces no executable file, so the program cannot run until it is fixed.

(b) the interpreter reaches this line and attempts to translate/execute it, oe **B1**

(b) it detects the missing bracket, reports the error immediately, and stops - no more of the program runs, oe **B1**

(b) Answer: The interpreter reaches the line, detects the missing bracket, reports the error immediately and stops.

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