MODULE P LANGUAGES AND IDES · P3

# Translators: compilers and interpreters

Original practice questions · 20 marks · ~25 minutes · Cambridge 0478 syllabus 4.2.3, 4.2.4

Name _____ Date _____

**Instructions.** Answer all questions in the spaces provided. The marks for each part are shown in brackets [ ]. The total for this worksheet is **20 marks**. All organisations and programs on this sheet are made up.

## 1

Total: 2 marks

**(a)** Identify the **two** types of translator that can translate a program written in a high-level language into machine code. **[2]**

1

2

## 2

Total: 5 marks

**(a)** Tick (✓) **one** box in each row to show whether each statement applies to a compiler, an interpreter, or both. **[5]**

| Statement | Compiler | Interpreter | Both |
|---|---|---|---|
| Produces an executable file | | | |
| Translates one line of code, executes it, then moves on to the next line | | | |
| Translates high-level language into machine code | | | |
| Gives one error report listing every error it detects in the code | | | |
| Halts when it reaches an error, then continues from that point once the error is corrected | | | |

## 3

**Total: 4 marks**

A team of programmers at an engineering company is writing a program to control a robotic arm on a factory production line. When the program is finished, it will be loaded onto 200 robotic arms.

**(a)** Complete the table to show the most suitable type of translator for each stage, and give a reason for each choice. **[4]**

| Stage | Translator | Reason |
|---|---|---|
| Writing and testing the program | | |
| Translating the final program to load onto the 200 robotic arms | | |

## 4

**Total: 5 marks**

A gardener has written this algorithm to log greenhouse temperatures. It contains **two** errors: on line 05, `OUTPUT` is misspelt as `OUPTUT`, and on line 07, the identifier `Fahrenheit` is misspelt as `Farenheit`.

```
01 DECLARE Reading : REAL
02 DECLARE Fahrenheit : REAL
03 OUTPUT "Greenhouse log started"
04 INPUT Reading
05 OUPTUT "Reading stored"
06 Fahrenheit ← Reading * 1.8 + 32.0
07 OUTPUT "Temperature in Fahrenheit: ", Farenheit
```

**(a)** Describe how the errors are reported when the program is translated using an **interpreter**. **[3]**

**(b)** Describe how the errors are reported when the program is translated using a **compiler**. **[2]**

**5** **Total: 4 marks**

A software company sells a stock-control program to shops. It can supply the program as a compiled executable file, or as source code that each shop runs with an interpreter.

**(a)** Explain **two** advantages of supplying the program as a compiled executable file. **[4]**

1

2

**Total for this worksheet: 20 marks**