

## 2.5 – Programming languages and Integrated Development Environments – Past Exam Questions

### 2.5.1 Languages

<input type="checkbox"/> Characteristics and purpose of different levels of programming language: <ul style="list-style-type: none"> <li>○ High-level languages</li> <li>○ Low-level languages</li> </ul> <input type="checkbox"/> The purpose of translators <input type="checkbox"/> The characteristics of a compiler and an interpreter	<b>Required</b> <ul style="list-style-type: none"> <li>✓ The differences between high- and low-level programming languages</li> <li>✓ The need for translators</li> <li>✓ The differences, benefits and drawbacks of using a compiler or an interpreter</li> </ul> <b>Not required</b> <ul style="list-style-type: none"> <li>✗ Understanding of assemblers</li> </ul>
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### 2.5.2 The Integrated Development Environment (IDE)

<input type="checkbox"/> Common tools and facilities available in an Integrated Development Environment (IDE): <ul style="list-style-type: none"> <li>○ Editors</li> <li>○ Error diagnostics</li> <li>○ Run-time environment</li> <li>○ Translators</li> </ul>	<b>Required</b> <ul style="list-style-type: none"> <li>✓ Knowledge of the tools that an IDE provides</li> <li>✓ How each of the tools and facilities listed can be used to help a programmer develop a program</li> <li>✓ Practical experience of using a range of these tools within at least one IDE</li> </ul>
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2022

- (ii) Complete the description of programming languages and translators by writing the correct term from the box in each space.

continues	crashes	debugging	error	executable
high-level	interpreter	language	low-level	many
no	one	stops	with	without

Jack writes his program in a ..... language. This needs to be translated into assembly or machine code before it can be executed. This is done using a translator.

One type of translator is an interpreter. This converts one line of code and then executes it, before moving to the next line. It ..... when an error is found, and when corrected continues running from the same position. This translator is helpful when debugging code.

A second type of translator is a compiler. This converts all of the code and produces an error report. The code will not run until there are ..... errors.

The ..... file produced can be run ..... the compiler.

[5]

Sample Paper

5 A computer game is written in a high-level programming language.

(a) State why the computer needs to translate the code before it is executed.

..... [1]

(b) Either a compiler or an interpreter can translate the code.

Describe **two** differences between how a compiler and an interpreter would translate the code.

1 .....

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2 .....

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[4]

(e) An Integrated Development Environment (IDE) is used to write the program.

Identify **two** features of an IDE that might be used when writing the program.

1 .....

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2 .....

.....

[2]

2021

(b) Computers make use of electronic switches called transistors.

Describe how transistors can be used to store a value in binary.

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[2]

2020

- 2 Dru writes the following program using a high-level language.

```
01 function newscore(a,b)
02     temp = a*b
03     temp = temp + 1
04     return temp
05 endfunction
06 score = 18
07 name = "Dru"
08 print (score)
09 print ("name")
10 print (newscore(score,2))
11 print (score)
```

- (b) Describe the advantages of writing the program in a high-level language instead of in assembly language.

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.....  
.....  
..... [2]

- (c) Give **two** reasons why computer scientists use hexadecimal to represent numbers instead of binary.

1 .....  
.....  
2 .....  
..... [2]

2019

The algorithm is written in a high-level language. The high level code must be translated into machine code before a computer processor can execute it.

(c) Describe **two** methods of translating high level code into machine code.

1 .....

2 .....

[4]

2018

(ii) Describe what is meant by a “high level language”.

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..... [2]

**(b)** Victoria creates her program using an Integrated Development Environment (IDE).

Describe two tools or facilities that an IDE commonly provides.

[4]

2016

Joseph is using an Integrated Development Environment (IDE) to produce the program.

- (f) One tool in an IDE that Joseph uses is a translator.

Describe **two** additional tools in an IDE that Joseph could use to help him produce his program.

Tool 1 name: .....

Tool 1 description: .....

.....

Tool 2 name: .....

Tool 2 description: .....

.....

[4]

- (g) Joseph's IDE allows him to use both a compiler and an interpreter.

Describe how Joseph could make use of a compiler and an interpreter when producing his program.

Compiler: .....

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Interpreter: .....

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[4]

2015

- 5 Graeme is a freelance programmer. He has written a program for a client and gives the client both the high level code and the machine code of the program.

(a) (i) Describe what is meant by

High level code

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Machine code

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[4]

(ii) State why Graeme needs a compiler.

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[1]

### Some Extra Questions

11. A programmer is developing an ordering system for a fast food restaurant. When a member of staff inputs an order, it is added to a linked list for completion by the chefs.

The programmer is writing the program using an IDE.

Identify **three** features of an IDE that the programmer would use when writing the code and describe how the features benefit the programmer.

1 .....

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2 .....

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3 .....

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[6]

- 15(a) A games company has developed a game called Kidz Arrowz. The players throw an arrow at a target board and are awarded different points depending on which circle the arrow lands. Fig. 1 shows the board.

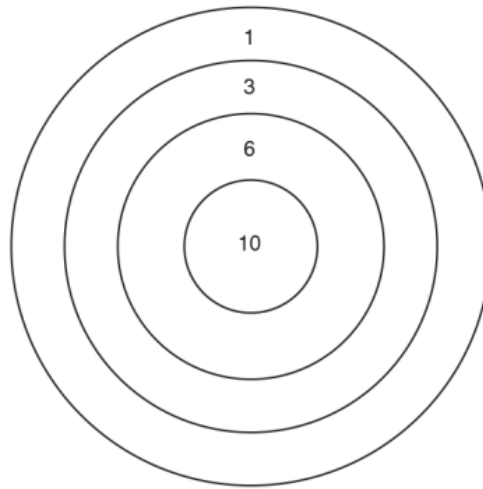


Fig. 1

A computer program is required to keep track of the scores for each competition. The user will enter the number of players, and the name of each player, in that competition to a maximum of 10.

The program is decomposed into multiple sub-programs, that each perform a specific task.

- (b). The programmer uses an Integrated Development Environment (IDE) to develop the program.

Describe how the IDE could be used to create the Kidz Arrowz program.

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[3]



- 17(a) Identify and describe **three** features commonly found in an IDE that will help programmers to find any bugs in their code.

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3

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[6]

- (b). Describe what is meant by the term *IDE (Integrated Development Environment)*.

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[2]

20. Dexter is leading a programming team who are creating a computer program that will simulate an accident and emergency room to train hospital staff.

Dexter's team is using an integrated development environment (IDE).

Describe how the programmers could make use of the following IDE tools:

Breakpoints -----

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Stepping -----

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[4]