Topic: 1.3.7 High- and low-level languages

May/June 2006 P1

6 (a) Give two benefits of using a high-level language for writing programs. [2]
(b) State one type of program that would be written in a low-level language rather than ahigh-level language and give a reason why. [2]

Oct/Nov 2007 P1

2 Give two differences between high level languages and low level languages. [2]

Oct/Nov 2009 P1

2 Give two advantages of using high level languages when writing new computer software than using low level languages [2]

May/June 2010 P11

10 (a) Compilers and interpreters translate high-level languages. Give two differences between compilers and interpreters.
(b) Programs can be written using high-level or low-level languages.
Give one advantage of using each method.
High-level language advantage
Low-level language advantage

May/June 2011 P12

7

```
1 h = 0
2 c = 0
3 REPEAT
4 READ x
5 IF x > h THEN x = h
6 c = c + 1
7 PRINT h
8 UNTIL c < 20
```

(b) The above code is an example of a high-level language.
Give TWO features of a high-level language. [2]
(c) The code is to be interpreted rather than compiled.
Give ONE difference between these two methods. [1]

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May/June 2012 P12

13 Look at these two pieces of code:

A:

```
        CLC
        LDX #0
loop:   LDA A,X
        ADC B,X
        STA C,X
        INX
        CPX #16
        BNE loop
```

B:

```
FOR Loop = 1 TO 4
    INPUT Number1, Number2
    Sum = Number1 + Number2
    PRINT Sum
NEXT
```

(a) Which of these pieces of code is written in a high-level language? [1]
(b) Give one benefit of writing code in a high-level language. [1]
(c) Give one benefit of writing code in a low-level language. [1]
(d) High-level languages can be compiled or interpreted.
Give two differences between a compiler and an interpreter.

May/June 2015 P11 (2210)

10 Five statements about interpreters and compilers are shown in the table below.
Study each statement.
Tick (✓) to show whether the statement refers to an interpreter or to a compiler.

Statement	Interpreter	Compiler
takes one statement at a time and executes it		
generates an error report at the end of translation of the whole program		
stops the translation process as soon as the first error is encountered		
slow speed of execution of program loops		
translates the entire program in one go		

[5]

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May/June 2015 P12 (2210)

9 (a) Five statements about interpreters and compilers are shown in the table below. Study each statement.

Tick (✓) to show whether the statement refers to an interpreter or to a compiler.

Statement	Interpreter	Compiler
creates an executable file that runs directly on the computer		
more likely to crash the computer since the machine code produced runs directly on the processor		
easier to debug since each line of code is analysed and checked before being executed		
slow speed of execution of program loops		
it is more difficult to modify the executable code, since it is in machine code format		

[5]

(b) State why a compiler or an interpreter is needed when running a high-level program on a computer.[1]

(c) Give **one** benefit of writing a program in a high-level language. [1]

(d) Give **one** benefit of writing a program in a low-level language. [1]

(e) Study the following three sections of code.

A:

```
1 0 1 0 1 1 0 1
1 1 0 0 1 1 1 0
1 0 1 1 0 1 1 1
```

B:

```
LDA X
INC X
STA Y
```

C:

```
FOR x ← 1 TO 10
READ n
ENDFOR
```

Identify, using the letters A, B or C, which of the above codes is an example of assembly code, high-level language code or machine code:
Assembly code .....
High-level language code .....
Machine code .....
[2]

May/June 2016 P12 (2210)
1 Complete the following by writing either ***compiler***, ***interpreter*** or ***assembler*** in the spaces provided.
..... – translates source code into object code.
..... – translates low-level language into machine code.
..... – stops the execution of a program as soon as it encounters an error. **[3]**

Oct/Nov 2016 P12 (2210)

1 (a) Give **two** reasons why a programmer would choose to write code in a low-level language.**[2]**
(b) High-level languages require either an interpreter or a compiler to translate the program.
The table below lists a number of statements about language translators.
Tick (3) to show which statements refer to interpreters and which refer to compilers.

Statements	Interpreter (✓)	Compiler (✓)
Translates the source code into machine code all at once		
Produces an executable file in machine code		
Executes a high-level language program one instruction at a time		
Once translated, the translator does not need to be present for the program to run		
An executable file is produced		

[5]

Oct/Nov 2016 P13 (2210)

6 High-level or low-level languages can be used when writing a computer program.
State **two** advantages of using a high-level language and **two** advantages of using a low-level language. **[4]**

8 Four descriptions about compilers and interpreters are shown below.
Draw lines to indicate which descriptions refer to a compiler and which descriptions refer to an

interpreter.

Description	
It is more difficult to debug the code since one error can produce many other associated errors.	
The speed of execution of program loops is slower.	Compiler
It produces fast, executable code that runs directly on the processor.	Interpreter
It is easier to debug the code since an error is displayed as soon as it is found.	

May/June 2017 P11 (2210)

[4]

2 Programmers can use a high-level language to write a computer program.

(a) Explain what is meant by the term 'high-level language'. **[2]**

(b) A program written in a high-level language is translated into machine code. This is so that it can be processed by a computer.
Name one type of translator that can be used. **[1]**
(c) Describe how your answer to **part (b)** translates this program. **[3]**

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Oct/Nov 2017 P12(2210)

6 Selma writes the following **four** answers in her Computer Science examination.
State which computer terms she is describing.

"It is a signal. When the signal is received it tells the operating system that an event has occurred."
Selma is describing .....

"It takes source code written in a high level language and translates it into machine code. It translates the whole of the source code at once."
Selma is describing .....

"The part of the central processing unit (CPU) that carries out calculations."
Selma is describing .....

"When data is transmitted, if an error is detected in the data received a signal is sent to ask for the data to be retransmitted. This continues until the data received is correct."
Selma is describing .....

[4]

Oct/Nov 2017 P13(2210)

10 Six statements about assembly language are shown.
Tick whether the statement is **true** or **false**.

Statement	true (✓)	false (✓)
Assembly language uses mnemonic codes.		
Assembly language programs do not need a translator to be executed.		
Assembly language is a low-level programming language.		
Assembly language is specific to the computer hardware.		
Assembly language is machine code.		
Assembly language is often used to create drivers for hardware.		

[6]

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May/June 2018 P11 (2210)

7 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. **[6]**

May/June 2018 P12 (2210)

8 Dimitri is writing a computer program in a high-level language.
He needs to send just the machine code for the program to his friend, electronically.
It is important that the program is executed as quickly as possible.
Identify which translator will be most suitable for Dimitri to use. Explain your choice. **[4]**