Software Design & Development: Revision Questions 1

Higher Computing Science – June Revision

1. A teacher requires a program to store details of his classes Higher exam results. Some example data is shown below.

Pupil Name	Cara Jones
Pupil House	Arran
Percentage	74.6
Grade	A

(a) Declare a record structure to store the data shown above.

RECORD results IS {STRING PupilName, STRING House, REAL Percentage, STRING Grade}

(b) Write a line of code to declare and array of records to store the details of 25 pupils

DECLARE pupils(25) AS results

2. A 1D array stores a list of 8 scores as shown below.

Index	0	1	2	3	4	5	6	7
Scores	16	12	19	20	17	8	13	19

(a) Write an algorithm to identify and display the highest score in the list

```
1.  SET max TO Scores[0]
2.  FOR counter FROM 1 TO 7 DO
3.      IF Scores[counter] > max
4.          SET max TO Scores[counter]
5.      END IF
6.  END FOR
7.  SEND "The highest score is "& max TO DISPLAY
```

(b) Write an algorithm to identify and display the lowest score in the list

```
1.      SET min TO Scores[0]
2.      FOR counter FROM 1 TO 7 DO
3.          IF Scores[counter] < min
4.              SET min TO Scores[counter]
5.          END IF
6.      END FOR
7.      SEND "The lowest score is "& min TO DISPLAY
```

(c) Write an algorithm to identify and display the number of scores over 15 in the list

```
1. SET numFound TO 0
2. FOR counter FROM 0 TO 7
3.      IF Scores[counter] > 15
4.          SET numFound TO numFound + 1
5.      END IF
6. END FOR
7. SEND "The number of scores over 15 is "& numFound TO DISPLAY
```

(d) Write an algorithm to identify and display the position of the value 20 in the list.

```
1. SET found TO FALSE
2. SET positionTO 0
3.  FOR counter FROM 0 TO 7
4.    IF Scores[counter] = 20
5.      SET found TO TRUE
6.      SET position TO counter
7.    END IF
8.  END FOR
9. IF found = TRUE
10.   SEND "Found at position "& position TO DISPLAY
```

11. ELSE

12. SEND “Not found”

13. END IF