"3-a-day" A-Level Exam Practice Unit 1 (003)

Question 1

Describe what is meant by a graph structure.

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.....[2]

Question 2

(c) Each airport has a three letter code. The airline's system stores the airports and corresponding airport codes:

Code	Name
BCN	Barcelona International
DUB	Dublin
LIS	Lisbon
LHR	London Heathrow
CDG	Paris, Charles De Gaulle
PRG	Prague
RKV	Reykjavik
FCO	Rome, Fiumicino

In a programming language or pseudocode of your choice write a program that takes in an airport code and finds and displays the airport name. You can assume a 2D array called airports has already been declared and populated with the data above. There is no need to validate the input and you can assume that the user will only enter a code that exists in the array.

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Question3

(b) De-Duplicator creates a tree to represent directories and files on the system. It then traverses each directory and file represented in the tree. It does this using a depth-first traversal. State what order it will visit each of the **files** as shown in Fig.1 below.

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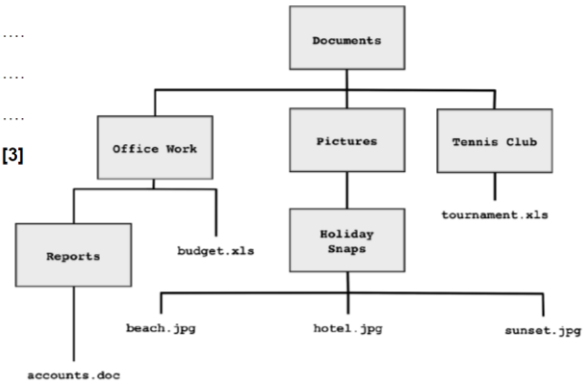
.....[3]



Answer 1

i	1 mark per bullet to max 2 • Collection of data nodes/vertices(1) • Connections/edges are set between nodes/vertices(1) • Graph (edges) can be directional or bi-directional(1) • Graphs (edges) can be directed or undirected(1)	**2** **AO1.1 (2)**

Answer 2

Question	Answer	Marks	Guidance
(c)	• Takes in code of airport (1). • Iterates through the array (1). • Checks the value of the code column at each iteration (1). • To see if it is equal to code given (1). • When it is, it takes the airport name from the name column (1). • And prints it to the screen (1).	**6** **AO3.2 (6)**	For 6 marks – 1 mark for each correct step in process. Any program that has the functionality specified in the question should receive full marks. Array could be 0 or 1 based. Examples include:

```
How to visualise the table:
              1    2      1     2      1     2
array = [ [BCN,Barc],[DUB, Dublin],[LIS, lisbon]  ...and so on  ]
              1          2              3

How to read the table:
array(1,1) -> BCN
array(1,2) -> Barc
array(2,1) -> DUB
array(3,2) -> Lisbon


A posible solution to the exam question

INPUT code
FOR row 1 - 8:
        IF airports(row, 1) == code:
                PRINT airports (row, 2)
```

```
code=input("Please enter code")
i=0
while airports[1,i]!=code
      i=i+1
endwhile
print("The airport is: "+airports[2,i])
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OR

```
code = input("Please enter code")
name=""
for i=0 to 7
      if airports[1,i]==code then
            name=airports[2,i]
      endif
next i
print("The airport is: "+name)
```

Answer 3

(b)	• Accounts.doc, budget.xls (1). • Followed by beach.jpg, sunset.jpg, hotel.jpg (in any order) (1). • Followed by tournament.xls (1).	**3** **AO2.1 (3)**	For 3 marks. If answer includes directory names ignore the directories and just mark order of files.