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Class : 1I / D-IV Basic Programming

Jobsheet 2

Experiment 1 : Complete Case Study on Sequence

1. *Question 1* : Has no count
   Question 2 :
   - Calculate interest = 5 years x 1.5% x 10 million
     = 750.000
   - Calculate the amount of savings = 750.000 + 10.000.000
     = 10.750.000

2. *Algorithm* :
   Input : Amount of savings, interest every month, duration of saving, fee admin
   Output: interest, current savings
   Other Data : -
   Process :
   - Enter the amount of savings, duration of saving, and interest percentage
   - Calculate interest = 5 years x 1.5% x 10 million = 750.000
   - Calculate the amount of savings = 750.000 + 10.000.000 = 10.750.000
   - Calculate the fee admin = 12.000 x 5 years = 720.000
   - Output total = interest + ampunt of savings – fee admin

   Savings that can be taken is 10.030.000.
   With the output details = interest + ampunt of savings – fee admin
                             = 750.000 + 10.000.000 – (12.000 x 5 years)
                             = 10.750.000 – 720.000
                             = 10.030.000

3. *Total savings for 7 years* that can be taken by Mrs.Asil is 10.042.000.
   With the algorithm details :
   Problem : Savings after 7 years
   Input : Amount of savings, interest every month, duration of saving, fee admin
   Output: interest, current savings
   Other Data : -
   Process :
   - Enter the amount of savings, duration of saving, and interest percentage
   - Calculate interest = 7 years x 1.5% x 10 million = 1.050.000
   - Calculate the amount of savings = 1.050.000 + 1.050.000 = 11.050.000
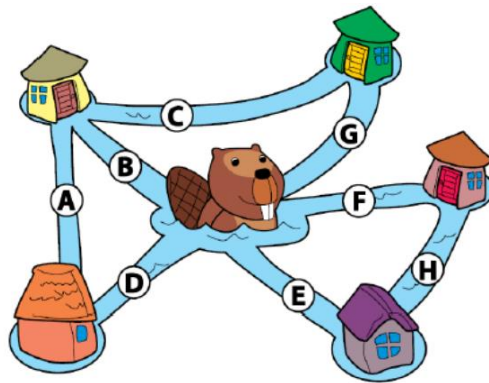   - Calculate the fee admin = 12.000 x 7 years = 1.008.000
   - Output total = interest + ampunt of savings – fee admin
                    = 1.050.000 + 10.000.000 – 1.008.000
                    = 10.042.000

Experiment 2 : Complete Case Study about Selection

1. *Rewrite and complete the Algorithm*

Input : River, River connectivity information (For example, A is adjacent to B and D)
Output : Path of the entire river
Other Data : -
Process :

- Beaver is in the middle of several river meetings. He can swim from the river B / D / E / F / G
- If starting from B then the track that can be traversed by choosing river A or C.
- If it crosses river A, then:
    o River A continues to river D
    o From H has the option to E / F / G river. If you choose F or G then it is possibility that one river must be crossed more than once. Then the river E was chosen
    o From E, proceed to the connected and have same direction river, river H
    o From the river H continued to the river that is connected and have same direction, there are F-G-C
    o So the path Beaver goes through is B-C-G-F-H-E-D-A (output)
- If it crosses river C, then :
    o River A continues to river G
    o From G has the option to D / E / F river. If you choose D or E then it is possibility that one river must be crossed more than once. Then the river F was chosen
    o From F, proceed to the connected and have same direction river, river H
    o From the river H continued to the river that is connected and have same direction, there are E-D-A
    o So the path Beaver goes through is C-G-F-H-E-D-A-B (output)
- If it starts from D then the track that can be traversed is river A.
- If starting from E then the track that can be traversed is river H.
- If starting from F then the track that can be traversed is river H.
- If starting from G then the track thatcan be traversed is river C.

2. *Algorithm of the regulation Warning Letter*
   Problem : warning letter according to student alpha hours
   Input : amount hours that students get alpha

Output : type of warning letter students will get

Other data : -

Process :

- Enter the total hours that student didn't attend the class
- If the haven't attend to class for $18 \leq$ hours < 36, will got Warning Letter I
- If the haven't attend to class for $36 \leq$ hours < 47, will got Warning Letter II
- If the haven't attend to class for $47 \leq$ hours , will got Warning Letter III
- Output type of warning letter.

Experiment 3 : Complete Case Study about Selection

1. All customers are sitting in these chairs:

   [1, 1]; [1, 3]; [1, 6]; [2, 2]; [2, 5]; [2, 6]; [3, 2]; [4, 3]; [4, 1]; [4, 2]; [4, 5]; [4, 7].
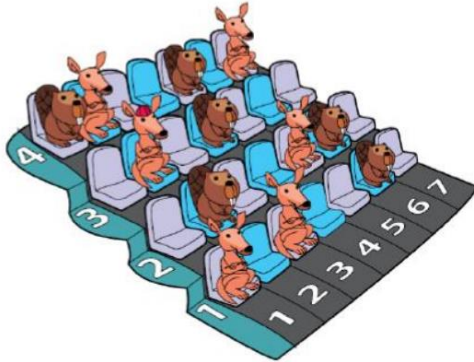
   Wrong sitting position :

   (1,3) should be (1,4)

   (1,5) should be (1,4)

   (4,7) should be (3,6)

   (4,5) should be (4,6)

   (4,1) should be (4,3)

   (4,3) should be (3,4)

2. Parking area, spectators at sports match field, flag raisers, freeway queue, orchestra & sircus audience

Task

1.

Problem : Lina wants to get a full painting
Input : 6 stamps
Output : Order of stamps
Process :
- Enter input 6 stamps
- Start sorting from the most basic
- Placing the 6th stamp
- Placing the 2nd stamp
- Placing the 4th stamp
- Placing the 5th stamp
- Placing the 3rd stamp
- Placing the 1st stamp
- Output is a painting

2. According to the rules above, the bicycles that is not suitable is B.
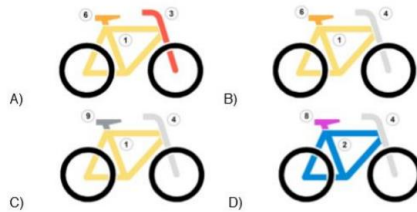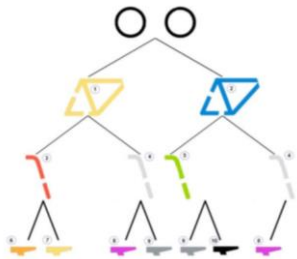
There will be 2 choices : blue or orange frame
The B bicycle has orange frame, it means it still has 2 choices.
Steering wheel that must be red and light grey, because the B bicycle has a light grey frame, so it still has other pedals choices those are purple and dark grey, but the B bicycle has orange pedal, so it is not suitable.

3.
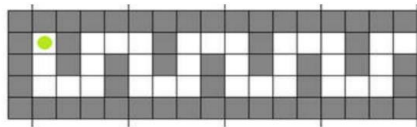
Problem : directions to bring out the green robot
Input : four directions: Right (R), Down (B), Left (L) or Up (A)
Output : out of the hole
Process :
- Enter the input
- Count the number of steps from each direction
- Path order is 2B-2R-2A-2R is a 1 stage
- Save data at 1 stage
- Calculate the number of repetitions required
- Accumulating amount = 1 stage x repetitions required
- Output the green robot can get out