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PROGRAMMING FUNDAMENTALS USING PYTHON

≡ Quiz 1

Computers are used to solve specific problems. We can write programs to solve some of the problems faced by an ATC.

ATC has to solve many problems as mentioned below.

Can you connect the below questions to the mentioned categories of problems using the mouse?

🕐 5 min

Questions	Categories
How many flights have landed today?	Optimization
Should a flight land immediately or circle in air for some more time?	Sorting
Which runway is currently free?	Decision
Among the many flights ready for landing, the flight with the lowest fuel level should be allowed to land first. How can it be done?	Searching
1200 landings and takeoffs happen in a day with only 2 runways. How do you manage it?	Counting

Submit   **Reset**

✓ Your answer is Right

Your answers are submitted.

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≡ Quiz 2

Assume, Num1=5, Num2=6.
Match the output of the arithmetic expressions.

🕐 3 min

Expression	Output
Num1+Num2	11
Num1-Num2	30
Num1*Num2	5
Num1/Num2	0
Num1%Num2	-1

Submit   **Reset**

✓ Your answer is Right

Considering Num1=5 and Num2=6

Num1+Num2 5+6 -> 11
Num1-Num2 5-6 -> -1
Num1*Num2 5*6 -> 30
Num1/Num2 5/6 -> 0
Num1%Num2 5%6 -> 5
Hence this is the answer.

Your answers are submitted.

Quiz 3

Assume, Num1=5, Num2=6.
Match the output of the relational expressions.

⏱ 3 min

Submit

Categories	Options
Num1< Num2	True
Num1<= Num2	True
Num1>Num2	False
Num1>=Num2	False
Num1!=Num2	True

✓ Your answer is Right

```
Num1 < Num2    ->    (5 < 6)    ->    True
Num1 <= Num2   ->    (5 <= 6)   ->    True
Num1 > Num2    ->    (5 > 6)    ->    False
Num1 >= Num2   ->    (5 >= 6)   ->    False
Num1 != Num2   ->    (5 != 6)   ->    True
Hence this is the answer.
```

Your answers are submitted.

19:12
11-06-2020

Quiz 4

Assume, Num1=5, Num2=6.
Match the output of the logical expressions.

⏱ 3 min

Try again in 1

Categories	Options
(Num1 < Num2) and (Num1 != Num2)	True
(Num2 >= Num1) or (Num1 > Num2)	True
not (Num1 == Num2)	True

✓ Your answer is Right

```
(Num1 < Num2) and (Num1 != Num2)  ->   (5 < 6) and (5 != 6)  ->   True and True  ->   True
(Num2 >= Num1) or (Num1 > Num2)   ->   (6 >= 5) or (5 > 6)    ->   True or False  ->   True
not(Num1==Num2)                   ->   not(5==6)              ->   not(False)     ->   True
Hence this is the answer.
```

Your answers are submitted.

19:13
11-06-2020

Exercise 1 - Level 1

Write a pseudo-code to represent the logic for converting a given number of days into its equivalent number of seconds.

Sample Input for No. of days	Expected Output
3	Total number of seconds: 259200
5	Total number of seconds: 432000

Note: You can drag and drop the required number of pseudo-code magnets into the pseudo-code box.

Estimated Time: 10 minutes

Pseudo-code Magnets:
```
Seconds=No_Of_Days*60*60*60
Seconds=No_Of_Days*24*60
Seconds=No_Of_Days*60*60
```

Pseudo-code
```
input No_Of_Days
Seconds= No_Of_Days*24*60*60
display "Total number of seconds:",Seconds
```

Congratulations !!! Your answer is right.

Try again in 1   Reset

Your solution has been submitted.

≡ Quiz 5

The pseudo-code given below is written to identify the result of the football match held in the campus.

Choose the correct logic from the given drop down to complete the pseudo-code.

🕐 5 min

SELECTION

```
1. input My_Team_Goals
2. input Opponent_Team_Goals
3. if (My_Team_Goals > Opponent_Team_Goals) then   ▾
4.    display "We won"
5. else if (My_Team_Goals < Opponent_Team_Goals) then  ▾
6.       display "They won"
7. else
8.    display "It's a tie"  ▾
9. end-if
```

Submit

✓ Your answer is Right

Line 3: if(My_Team_Goals > Opponent_Team_Goals) then	Line 4 is reached when we score more goals than opponent team
Line 5: if(My_Team_Goals < Opponent_Team_Goals) then	Line 6 is reached when our opponent scores more goals than us
Line 8: display "It's a tie"	It will be a tie, if both teams score equal number of goals

Your answers are submitted.

≡ Quiz 6

What is the outcome of the following pseudo-code?

🕐 5 min

```
1  input Counter
2  while(Counter<5) do
3     Counter=Counter+1
4     display Counter
5  end-while
```

Assume that the input value provided to variable, Counter is 1

● 2,3,4,5

○ 2,3,4

○ 1,2,3,4

○ 1,2,3,4,5

Try again in 2

✓ Your answer is Right

👾 For this option to be correct, control should reach line 4 four times. While loop in line 2 executes for all values of Counter less than 5 and during each iteration, value of Counter is incremented by 1 and displayed.
Initial value of Counter being 1, control reaches line 4 four times displaying Counter values - 2,3,4 and 5.
Hence this is the answer.
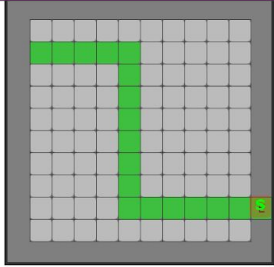
Your answers are submitted.

Exercise 2 - Level 2

Pseudo-code Magnets:

move Right ˅

end-for

for(counter= 0 ˅ , counter<= 0 ˅ , counter= counter+1 ˅)

Pseudo-code:

```
for(counter= 0 ˅ , counter<= 4 ˅ , counter= counter+1 ˅ )
move  Right ˅
end-for
for(counter= 0 ˅ , counter<= 6 ˅ , counter= counter+1 ˅ )
move  Down ˅
end-for
for(counter= 0 ˅ , counter<= 5 ˅ , counter= counter+1 ˅ )
move  Right ˅
end-for
```

Congratulations... You have reached the destination

Submit   Clear   Reset

Your answer has been submitted successfully.

Exercise 3: Collaborative Exercise - Level 2

Pseudo-code Magnets:

display Sunset

display Rain

display Nightsky

add Tree

display Moon

```
display Daylight
display Snow
add Mountain
end-for
for(Counter= 0 ˅ , Counter<= 3 ˅ , Counter= Counter+1 ˅ )
add Sheep
end-for
```

Reset   Submit

Expected Canvas   **Current Canvas**

Congratulations !!! Your answer is right.

Your answer has been submitted successfully.

Assignment 2: Collaborative Assignment - Level 2

Pseudo-code Magnets:

Pseudo-code

```
input Number1,Number2,Number3
if(Number1 < Number2) then
if(Number1 < Number3) then
display "Num1 is the smallest"
else
display "Num3 is the smallest"
end-if
else if(Number2 < Number3) then
display "Num2 is the smallest"
else
display "Num3 is the smallest"
end-if
```

Congratulations !!! Your answer is right.

Submit   Reset

Your solution has been submitted.

17:25
17-06-2020

Assignment 3: Collaborative Assignment - Level 2

```python
 6  distance_one_way=190
 7  per_head_cost=0
 8  divisible_by_five=False
 9
10  #Start writing your code from here
11  #Populate the variables: per_head_cost and divisible_by_five
12  d=distance_one_way*2
13  d=d/mileage
14  d=d*amount_per_litre
15  per_head_cost=d/4
16  if d%5==0:
17      divisible_by_five=True
18
19  print(per_head_cost)
20  print(divisible_by_five)
```

Verify   Submit   🐍 Python   Visualize   Execute

Result Pane:
```
316.6666666666667
False
```

Your code has been submitted.

17:26
17-06-2020

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Assignment 4: Mandatory - Level 1

Question   Submission

Code pane:

```
1   #PF-Assgn-4
2   #This verification is based on string match.
3
4   principal=7800
5   rate_of_interest=7.7
6   time=26
7   interest=0
8
9   #Start writing your code from here
10  #Populate the variable: interest
11  interest=(principal*rate_of_interest*time)/100
12
13
14  #Do not modify the below print statement for verification to work
```

RESET   FULLSCREEN   A+   A-   LAST SUBMISSION

Verify   Submit   Python   Visualize   Execute

Result Pane:

Correct Solution.

17:26
17-06-2020

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PROGRAMMING FUNDAMENTALS USING PYTHON

Assignment 5: Mandatory - Level 2

Note: This page has system assisted problem solving. Interactions would come to your help if you wait at any step or if you make a mistake. We encourage you to try different logic variations.

Possible Pseudo-code Magnets

Your Answer

```
Input Year
if(Year%4==0 and Year%100!=0) then
display "It is a leap year"
else if(Year%400==0) then
display "It is a leap year"
else
display "It is not a leap year"
end-if
```

Congratulations !!! Your answer is right.

Try again in 2   Reset

Your solution has been submitted.

17:28
17-06-2020

Assignment 6: Mandatory - Level 2

Pseudo-code Magnets:

- Reverse=Remainder*10+Reverse
- while(Number==0) do
- Remainder=Number/10
- Number=Number%10

Pseudo-code

- input Number
- Temp=Number
- Reverse=0
- while(Number!=0) do
- Remainder=Number%10
- Reverse=Reverse*10+Remainder
- Number=Number/10
- end-while
- if(Temp==Reverse) then
- display "Palindrome"
- else
- display "Not a Palindrome"
- end-if

Congratulations !!! Your answer is right.

Try again in 2   Reset

Your solution has been submitted.

17:31
17-06-2020

Assignment 7: Mandatory - Level 2

Write a pseudo-code to find the sum of numbers divisible by 4.The pseudo-code must allow the user to accept a number and add it to the sum if it is divisible by 4. It should continue accepting numbers as long as the user wants to provide an input and should display the final sum.

Note: You can drag and drop the pseudo-code magnets to the pseudo-code step boxes and create the appropriate pseudo-code.

Estimated Time: 20 minutes

Pseudo-code Magnets:

- if(Number/4==0) then
- while(Choice=='No') do

Pseudo-code

- Sum=0
- Choice='Yes'
- while(Choice=='Yes') do
- input Number
- if(Number%4==0) then
- Sum=Sum+Number
- end-if
- display "Do you want to continue? (Enter Yes or No)"
- input Choice
- end-while
- display Sum

Try again in 2   Reset

Congratulations !!! Your answer is right.

17:37
17-06-2020

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Assignment 8 - Level 2

Pseudo-code Magnets:

Number=Number%10
Sum=Sum+Number*Number*Number
if(Number==Sum) then
while(Number==0) do

Pseudo-code

input Number
Temp=Number
Sum=0
while(Number!=0) do
Remainder=Number%10
Sum=Sum+Remainder*Remainder*Remainder
Number=Number/10
end-while
if(Temp==Sum) then
display "This is an Armstrong Number"
else
display "This is not an Armstrong Number"
end-if

Congratulations !!! Your answer is right.

Submit   Reset

Your solution has been submitted.

Programming Fundamentals using Python

♡ ≡

17:41
17-06-2020

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PROGRAMMING FUNDAMENTALS USING PYTHON

Assignment 9 - Level 3

Pseudo-code Magnets:

end-while
if(Path_Ahead_Available) then
Turn Right ⌄
move forward
while(start != end) do
Diffuse Bombs
else if(Left_Turn_Available) then
else if(Diffuser_Found) then
end-if
else
if(Key_Found) then
end-if
Unlock Lock

Pseudo-code:

while(start != end) do
if(Path_Ahead_Available) then
move forward
else if(Left_Turn_Available) then
Turn Left ⌄
move forward
end-if
if(Key_Found) then
Unlock Lock
else if(Diffuser_Found) then
Diffuse Bombs
end-if
end-while

Congratulations... You have reached the destination

Submit   Clear   Reset

Your answer has been submitted successfully.

Programming Fundamentals using Python

♡ ≡

17:47
17-06-2020

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PROGRAMMING FUNDAMENTALS USING PYTHON

≡ Assignment 10 - Level 2

Pseudo-code Magnets:

display Nightsky
display Sunrise
display Snow
display Sunset
display Moon
display Rain
add Tree

display Daylight
for(Counter= 0 ⌄ , Counter<= 3 ⌄ , Counter= Counter+1 ⌄)
add Mountain
end-for
for(Counter= 0 ⌄ , Counter<= 2 ⌄ , Counter= Counter+1 ⌄)
add Sheep
end-for

Reset   Submit

Expected Canvas   **Current Canvas**

Congratulations !!! Your answer is right.

Your answer has been submitted successfully.

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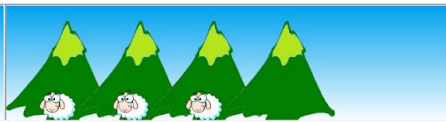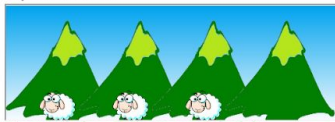PROGRAMMING FUNDAMENTALS USING PYTHON

≡ Assignment 11 - Level 2

display Rain
end-for
display Sunset
display Sunrise
display Daylight

add Sheep
display Nightsky
display Moon
display Snow
for(Counter= 0 ⌄ , Counter<= 2 ⌄ , Counter= Counter+1 ⌄)
add Tree

Reset   Submit

Expected Canvas   **Current Canvas**

Congratulations !!! Your answer is right.

Your answer has been submitted successfully.

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PROGRAMMING FUNDAMENTALS USING PYTHON

Assignment 12 - Level 2

Estimated Time: 10 minutes

Run Code

```
 5 alex = turtle.Turtle()      # create a turtle name
 6 alex.shape("turtle")        # alex looks like a tu
 7 alex.color('red')           # alex has a color
 8
 9
10 alex.circle(50)             # draws a circle of r
11 alex.backward(50)           # alex moves 50 posit
12 alex.forward(150)            # alex moves 50 posi
13 alex.right(60)              # alex turns 60 degre
14 alex.left(150)              # alex turns 60 degre
15 alex.forward(100)
16 alex.right(-90)
17 alex.forward(200)
18 alex.left(90)               # alex turns 60 degree
19 alex.forward(100)
20 alex.right(-90)
21 alex.forward(200)
22 alex.right(90)
```

Programming Fundamentals using Python

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PROGRAMMING FUNDAMENTALS USING PYTHON

Assignment 15: Collaborative Assignment - Level 1

Code pane:

```
 1  #PF-Assgn-15
 2
 3  def find_product(num1,num2,num3):
 4      product=0
 5      #write your logic here
 6      if num1==7:
 7          product=num2*num3
 8      elif num2==7:
 9          product=num3
10      elif num3==7:
11          product=-1
12      else:
13          product=num1*num2*num3
14      return product
15
16  #Provide different values for num1, num2, num3 and test your program
```

Verify   Submit   🐍 Python   Visualize   Execute

Result Pane:

7 out of 7 test cases passed.

1 out of 1 structural test cases passed.

6 out of 6 logical test cases passed.

Your code has been submitted.

Programming Fundamentals using Python

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PROGRAMMING FUNDAMENTALS USING PYTHON

Assignment 16: Collaborative Assignment - Level 2

Question   Submission

Code pane:

```
10            r5=rupees_to_make//5
11            rupees_to_make=rupees_to_make%5
12        if rupees_to_make<5:
13            r1=rupees_to_make
14        if r1<=no_of_one and r5<=no_of_five:
15            five_needed=r5
16            one_needed=r1
17            print("No. of Five needed :", five_needed)
18            print("No. of One needed  :", one_needed)
19        else:
20            print(-1)
21
22
23
24      # Use the below given print statements to display the output
25      # Also, do not modify them for verification to work
```

Verify   Submit   Python   Visualize   Execute

Result Pane:
```
No. of Five needed : 5
No. of One needed  : 3
```

Your code has been submitted.

18:42
17-06-2020

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PROGRAMMING FUNDAMENTALS USING PYTHON

Assignment 17: Mandatory - Level 1

```
3  def find_new_salary(current_salary,job_level):
4      # write your logic here
5      new_salary=0
6      if job_level==3:
7          new_salary+=current_salary*15/100
8      elif job_level==5:
9          new_salary+=current_salary*5/100
10     elif job_level==4:
11         new_salary+=current_salary*7/100
12     return new_salary
13
14 # provide different values for current_salary and job_level and test your
       program
15 new_salary=find_new_salary(10000,3)
16 print(new_salary)
```

Submit   Python   Visualize   Execute

Result Pane:
```
1500.0
```

Your code has been submitted.

18:48
17-06-2020

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```python
 2
 3  def convert_currency(amount_needed_inr,current_currency_name):
 4      current_currency_amount=0
 5      #write your logic here
 6      if current_currency_name=="Euro":
 7          current_currency_amount=amount_needed_inr*0.01417
 8      return current_currency_amount
 9
10
11  #Provide different values for amount_needed_inr,current_currency_name
        and test your program
12  currency_needed=convert_currency(2000,"Euro")
13  if(currency_needed!= -1):
14      print(currency_needed )
15  else:
```

Submit   Python   Visualize   Execute

Result Pane:
28.34

Your code has been submitted.

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Question   Submission

Code pane:
```python
 8          d=0
 9      elif distance_in_kms>3 and distance_in_kms<=6:
10          d=3
11      else:
12          d=6
13
14      if food_type=="N":
15          bill_amount=(150*quantity_ordered)+d
16      elif food_type=="V":
17          bill_amount=(120*quantity_ordered)+d
18      else:
19          return 0
20      return bill_amount
21
22  #Provide different values for food_type,quantity_ordered,distance_in_kms
        and test your program
```

Verify   Enabling in 2   Python   Visualize   Execute

Result Pane:
306

Your code has been submitted.

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≡ Assignment 21 - Level 3

Problem Statement | Submission | Test the program

Code pane:

```
 1  #PF-Tryout
 2
 3  def generate_next_date(day,month,year):
 4      #Start writing your code here
 5      next_day=0
 6      next_month=0
 7      next_year=year
 8      if day!=30  and (month==2 or month==4 or month==6 or month==9 or
            month==11) :
 9          next_day=day+1
10      elif day==30  and( month==2 or month==4 or month==6 or month==9 or
            month==11 ):
11          next_day=1
12          next_month=month+1
13      elif day!=31  and( month==1 or month==3 or month==5 or month==7 or
            month==12 or month==10 or month==8 ):
```

Submit   🐍 Python   Visualize   Execute

Result Pane:

```
1 - 7 - 2015
```

◁   ▷