AI Programming

[Day-4]

Understand the uses of conditional statement like if, if-else, if-elif-elseetc.

Program 1: [Conditional Statement and Operators]Cost of VIP registration number

A man wants to get the attractive last four digits of a registration number for his newly purchased
car. Though RTO has some VIP numbers, they are provided by adding some additional surcharge on
the cost of getting a normal registration number. The cost of getting a normal registration number is
5000 rupees whereas the additional surcharges for different VIP numbers are added according to the
pattern of the last four digits. The cost of these additional charges is given as follows.

Pattern	Additional Cost
Same last four digits	5000
Palindrome	3000
Divisible by 2	1000

Write a python program to compute the cost of a particular registration number if we feed the last four digits of that number as input.

Sample input:
3454
3333
3443
1223

Sample output:
Cost is : 6000
Cost is : 10000
Cost is : 8000
Cost is : 5000

Solution:

```python
num = int(input('Enter the last 4 digit of registration :  '))
a1=num%10
num=int(num/10)
a2=num%10
num=int(num/10)
a3=num%10
num=int(num/10)
a4=num%10
num=int(num/10)
cost=5000
if (a1==a2)and(a3==a2)and(a3==a4)and(a1%2!=0):
    total_cost = cost + 5000
elif (a1==a2)and(a3==a2)and(a3==a4)and((a1%2==0)):
    total_cost = cost + 6000
elif (a1==a4)and(a3==a2)and(a1%2!=0):
    total_cost = cost + 3000
elif (a1==a4)and(a3==a2)and(a1%2==0):
    total_cost = cost + 4000
elif(a1%2==0):
    total_cost = cost + 1000
elif(a1%2!=0):
    total_cost = cost
print('Total cost is : ',total_cost)
```

or

```python
# Input the last four digits of the registration number
last_four_digits = int(input("Enter the last four digits of the registration number: "))

# Calculate the cost based on the provided pattern
cost = 5000  # Base cost for a normal registration number

# Check if the last four digits are the same
if last_four_digits % 1111 == 0:
    cost += 5000
# Check if the last four digits form a palindrome
elif str(last_four_digits) == str(last_four_digits)[::-1]:
    cost += 3000
# Check if the last four digits are divisible by 2
elif last_four_digits % 2 == 0:
    cost += 1000

# Print the calculated cost
print("Cost is: ",cost)
```

Output:
Enter the last 4 digit of registration : 3454
Total cost is : 6000
Or
Enter the last four digits of the registration number: 3333
Cost is: 10000

Program 2: [Conditional Statement]Divisibility game

Two friends A and B are meeting after a long time. Usually, they love to play some math games. This times A takes the call and decides the game. The game is very simple, A says out an integer and B has to say whether the number is divisible by 4 or not. B as usual knows the logic but since A does not give B much time to think, so B decides to write a python program. Task is to help B to accomplish this task by writing a python program which will calculate whether the number is prime or not.

Sample Input:
234524
1234
Sample Output:
Yes
No

Solution:

```python
# Input a number from the user
number = int(input("Enter a number: "))

# Check if the number is divisible by 4
if number % 4 == 0:
    print("Yes")
else:
    print("No")
```

Output:
```
Enter a number: 234524
Yes
```

Program 3: [Conditional Statement and Operator] Squares in a Triangle

A man is very curious, and usually wants to know whether the N squares of size 2x2 can be fit in a right angled isosceles triangle of base B or not.
Note: One side of the square must be parallel to the base of the isosceles triangle. Base is the shortest side of the triangle.

Sample Input:
B = 3
N = 2
B = 8
N = 4
Sample Output:
No
Yes

Solution:

```python
B = int(input('Enter the base of isosceles right triangle : '))
N = int(input('Enter the Number of squares of size(2X2) : '))
if (B>0 and B<4):
```

```python
    print("NO, ",N ," squares of size(2X2) cannot be fit in a right isosceles triangle of base ",B)

if(B%2==0):
  if(N<=(B-3)):
    print("YES, ",N," squares of size(2X2) can be fit in a right isosceles triangle of base ",B)
  else:
    print("NO, ",N ," squares of size(2X2) cannot be fit in a right isosceles triangle of base ",B)
if(B%2!=0):
  if(N<=(B-4)):
    print("YES, ",N," squares of size(2X2) can be fit in a right isosceles triangle of base ",B)
  else:
    print("NO, ",N," squares of size(2X2) cannot be fit in a right isosceles triangle of base ",B)
```

Output:
```
Enter the base of isosceles right triangle : 8
Enter the Number of squares of size(2X2) : 4
YES,  4  squares of size(2X2) can be fit in a right isosceles triangle of base  8
```

Program 4: [Conditional Statement] Pens for Term end examination

Rohit purchased the ball pens from three shops for the coming term end examination (TEE).He purchased x pens from the first shop, y pens from the second shop and is yet to buy pens from the third shop. Rohit is very superstitious and believes that if the sum of pens he buys from the three shops is a divisible by 5, he'll clear the TEE. Please help him by calculating for him the minimum number of pens that if purchased from the third shop will make the sum of pens as divisible 5.
Note: At least one pen should be bought from the third shop.
Sample input:
1

3

4

3

Sample output:
1

3

Solution:

```python
# Input the number of pens purchased from
the first two shops and the desired
remainder
x = int(input("Pens purchased from the
first shop: "))
y = int(input("Pens purchased from the
second shop: "))
maxpen=5
while(maxpen<x+y):
  maxpen+=5
left=maxpen-x-y

print(left)
```

Output:
```
Pens purchased from the first shop: 4
Pens purchased from the second shop: 3
3
```

Program 5: Visa Status

A person goes to the US Embassy to apply for a tourist visa. The embassy management grants a visa if it fulfills the following three conditions.
1. He has negative RT-PCR report.
or
2. He is fully vaccinated.
and
3. His duration of tour is greater than 1 and not more than 15 days.

Sample Input:
```
Neg_RT_PCR: yes
Vaccine_status: yes
duration: 10
Neg_RT_PCR: yes
Vaccine_status: no
duration: 12
Neg_RT_PCR: no
Vaccine_status: yes
duration: 16
```
Sample Output:
```
Granted
Granted
Denied
```
Solution:

```python
# Input the conditions for visa
application
neg_RT_PCR = input("Negative RT-PCR report
(yes/no): ").lower()
vaccine_status = input("Vaccine status
(yes/no): ").lower()
duration = int(input("Duration of tour (in
days): "))

# Check if the person fulfills the
conditions for a tourist visa
if (neg_RT_PCR == "yes" or vaccine_status
== "yes") and (duration > 1 and duration
<= 15):
    print("Granted")
else:
```

```python
    print("Denied")
```

Output:
```
Negative RT-PCR report (yes/no): no
Vaccine status (yes/no): yes
Duration of tour (in days): 16
Denied
```

```
Is RT-PCR report negative no
Are you vaccinated yes
Number of days  of tour is 16
Visa Not Granted
```

Program 6: [Conditional Statement] Find the maximum value

The man had a box with N (2<=N<=5) balls of different weights and they are arranged inside it according to their weights: A1, A2, ..., AN. (i.e., A1<= A2<= A3<=...<= AN). He also had a one ball whose weight is equivalent to number of balls that box contains, and it is placed in front of all balls. This means that actually box contains N+1 balls. After a few minutes, in his excitement, he started dancing with the box in his pocket, and the N+1 balls of that box got jumbled up. So now, he no longer knows which of the N+1 balls have is weight equalling to N, and which the other balls are. He wants to figure out the largest weight of the N balls. Write a python script that help him find this. [Do not use Loop]

Input:
```
1 2 1
3 1 28
```

Output:
```
1
8
```
Solution:

```python
N = int(input('Enter number of balls '))
if(N==2):
  x1=int(input('Enter the weight of first
ball '))
  x2=int(input('Enter the weight of second
ball '))
  if(x1>x2):
    print(x1)
  elif(x1<=x2):
    print(x2)

if(N==3):
  x1=int(input('Enter the weight of first
ball '))
```

```python
  x2=int(input('Enter the weight of second
ball '))
  x3=int(input('Enter the weight of third
ball '))
  if(x1>=x2)and(x1>=x3):
    print(x1)
  if(x2>=x3)and(x2>=x1):
    print(x2)
  if(x3>=x2)and(x1<=x3):
    print(x3)

if(N==4):
  x1=int(input('Enter the weight of first
ball '))
  x2=int(input('Enter the weight of second
ball '))
  x3=int(input('Enter the weight of third
ball '))
  x4=int(input('Enter the weight of forth
ball '))
  if(x1>=x2)and(x1>=x3)and(x1>=x4):
    print(x1)
  if(x2>=x1)and(x2>=x3)and(x2>=x4):
    print(x2)
  if(x3>=x2)and(x3>=x1)and(x3>=x4):
    print(x3)
  if(x4>=x2)and(x4>=x3)and(x4>=x1):
    print(x4)

if(N==5):
  x1=int(input('Enter the weight of first
ball '))
  x2=int(input('Enter the weight of second
ball '))
  x3=int(input('Enter the weight of third
ball '))
  x4=int(input('Enter the weight of forth
ball '))
  x5=int(input('Enter the weight of fifth
ball '))

if(x1>=x2)and(x1>=x3)and(x1>=x4)and(x1>=x5
):
    print(x1)

if(x2>=x1)and(x2>=x3)and(x2>=x4)and(x2>=x5
):
    print(x2)

if(x3>=x2)and(x3>=x1)and(x3>=x4)and(x3>=x5
):
    print(x3)

if(x4>=x2)and(x4>=x3)and(x4>=x1)and(x4>=x5
):
    print(x4)

if(x5>=x2)and(x5>=x3)and(x5>=x4)and(x5>=x1
):
    print(x5)
```

Output:
```
Enter number of balls 5
Enter the weight of first ball 1
Enter the weight of second ball 23
Enter the weight of third ball 32
Enter the weight of forth ball 4
Enter the weight of fifth ball 34
34
```

Program 7: Odd-Even system in Delhi

To reduce the pollution, the Delhi government has decided to apply the odd-even system by this winter in the state. In this system, vehicles with odd numbers will be allowed to operate in MWFS (Monday, Wednesday, Friday and Sunday) and vehicles with even numbers will be allowed in TTS (Tuesday, Thursday and Saturday) in a week. Can you help the Delhi government to implement this system in Python?

Sample Input:
Enter your vehicle number (only last 4 digit integer number):2543
Enter the day of driving: Tuesday

Sample Output:
You are not allowed to drive, choose some other day.

Solution:
```python
num = int(input('Enter your Vehicle
number(only 4 digit integer number ) :'))
day = input('Enter the day of driving : ')
if((num%2==0)and((day=='tuesday')or(day=='
thrusday')or(day=='saturday'))):
  print("You are allowed to drive. ")
elif((num%2!=0)and((day=='monday')or(day==
'wednesday')or(day=='friday')or(day=='sund
ay'))):
  print("You are allowed to drive. ")
else:
  print("You are not allowed to drive,
choose some other day. ")
```

Output:
```
Enter your Vehicle number(only 4 digit
integer number ) :2543
Enter the day of driving : tuesday
You are not allowed to drive, choose
some other day.
```