

Bridge Course

Python Control Structures

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1. Write a program to compute the area of a square or area of a circle after prompting the user to type the first character of the name ('S' for square or 'C' for circle).

```
shape = input("Enter the area of square : ")
if (shape == "s"):
    a= int(input("Enter the area of square : "))
    sq=a**2
    print("The area of square : ",sq)
elif(shape == "c"):
    b= int(input("Enter the radius of circle : "))
    cr=3.14*(b**2)
    print("The area of circle is : ",cr)
else:
    print("error")
```

2. Write a program to implement the flowchart.(flowchart : refer in problem sheet)

```
ph = int(input("Enter the pH Level : "))
if(ph > 7):
    if (ph < 12):
        print("Alkaline")
    else:
        print("Very Alkaline")
else:
    if (ph == 7):
        print("Neutral")
    else:
        if(ph > 2):
            print("Acidic")
        else:
            print("Very Acidic")
```

3. Write a program that reads a ship's serial code and displays the class of the ship. Each ship's serial code begins with a letter indicating the class of the ship.

```
sh= input("Enter the ship seriel code: ")
if (sh=="b" or sh=="B"):
    print("Battleship")
elif (sh=="c" or sh=="C"):
    print("Cruiser")
elif (sh=="d" or sh=="D"):
    print("Destroyer")
elif (sh=="f" or sh=="F"):
    print("Frigate")
else:
    print("Error")
```

4. Write a program to calculate the square of those numbers only whose least significant digit is 5.

```
n = int(input("Enter the number: "))
s = n%10
if (s == 5):
    print("Square : ",n*n)
else:
    print("not 5 in last digit")
```

5. Write a program that calculates the body mass index (BMI) and categorizes it as underweight, normal, overweight, or obese, based on the following table

```
weight = float(input("Enter the weight : "))
height = float(input("Enter the Height : "))
bmi = weight/(height*height)

if(bmi < 18.5):
    print("Underweight")
elif(bmi >=18.5 and bmi <=24.9):
    print("Healthy")
elif(bmi >=25.0 and bmi <=29.9):
    print("Overweight")
elif(bmi >=30.0):
    print("Obese")
else:
```

```
print("Error")
```

6. A company has the following discount policy. If the purchase is for under Rs.2000, no discount is given. On purchases for Rs. 2000 and above but less than Rs.5000 a discount of 5% is given. On purchase of goods for Rs. 5000 and above a discount of 8% is given. Write a program to accept the purchase amount and print the final bill amount.

```
p1 = float(input("Enter the Product 1 Price : "))
p2 = float(input("Enter the Product 2 Price : "))

total = (p1 + p2)
dis1 = (total*(5/100))
dis3 = (total-dis1)
dis2 = (total*(8/100))
dis4 = (total-dis2)
if (total >2000) and (total <5000):
    print("Total Bill : ",dis3)
elif (total >5000):
    print("Total Bill : ",dis4)
else:
    print("No discount , Your Total Bill is : ",total)
```

7. Write a program to calculate the Electricity bill. Read the previous and current meter reading. The charges are as follows.

```
unit = float(input("Enter the Unit Consumed: "))

if unit <= 100:
    fixed_charge = 0
    cost = 0
    total = fixed_charge + cost
elif unit <= 200:
    fixed_charge = 20
    cost = (unit - 100) * 2
    total = fixed_charge + cost
elif unit <= 500:
    fixed_charge = 30
    if unit <= 200:
        cost = (unit - 100) * 2
    else:
        cost = (200 - 100) * 2 + (unit - 200) * 3
    total = fixed_charge + cost
```

```

else:
    fixed_charge = 50
    if unit <= 200:
        cost = (unit - 100) * 3.5
    elif unit <= 500:
        cost = (200 - 100) * 3.5 + (unit - 200) * 4.6
    else:
        cost = (200 - 100) * 3.5 + (500 - 200) * 4.6 + (unit -
500) * 6.6
    total = fixed_charge + cost

print("Your Electricity Bill is: Rs.", round(total, 2))

```

8. Admission to a professional course is subject to the following conditions: a. Marks in Mathematics ≥ 60 b. Marks in Physics ≥ 50 c. Marks in Chemistry ≥ 40 d. Total in all three subjects ≥ 200 (or) Total in Mathematics and Physics ≥ 150 Write a program to check whether a particular student's mark is eligible for admission or not.

```

maths_mark = int(input("Enter the Maths Mark : "))
physics_mark = int(input("Enter the Physics Mark : "))
chemistry_mark = int(input("Enter the Chemistry Mark : "))

total = (maths_mark + physics_mark + chemistry_mark)
total2 = (maths_mark + physics_mark)

if (total >= 200) and (total2 >= 150) and (maths_mark >= 60) and
(physics_mark >= 50) and (chemistry_mark >= 40):
    print("You are Eligible")
else:
    print("You are not Eligible")

```

9. The basic eligibility criteria required to apply for any SBI Credit Cards are as follows, Age of the primary applicant must be between 21 years to 60 years. Age of the add-on card applicant must be above 18 years. Must be either salaried, self-employed, student, or retired pensioner. Primary applicants should have a stable income (gross) of up to Rs.3 lakh per year. Accept required inputs from the user, Write a program to check if the person meets the bank's eligibility criteria

```

name = input("Enter Your Name : ")
age = int(input("Enter Your Age : "))
add_name = input("Enter Nominee Name : ")
add_on_age = int(input("Enter Nominee age : "))
prof = input("Enter your Status (salaried,
self-employed, student, retired-pensioner) : ")
income = int(input("Enter Your Annual Income : "))

if (age >=21) and (age <=60):
    if (add_on_age >=18):
        if (prof=="salaried" or prof=="self-employed" or
prof=="student" or prof=="retired-pensioner"):
            if (income >= 300000):
                print("Congratulations! You are eligible for a
credit card.")
            else:
                print("Sorry, you are not eligible for a credit
card due to insufficient income.")
        else:
            print("Sorry, you are not eligible for a credit card
due to your profession.")
    else:
        print("Sorry, you are not eligible for a credit card due
to nominee age.")
else:
    print("Sorry, you are not eligible for a credit card due to
your age.")

```

10. Write a python program to print all numbers in a range 700 to 900 (inclusive) divisible by a given number from user

```

num = int(input("Enter a number: "))

for i in range(700, 900):
    if i % num == 0:
        print(i, end= ' ')
print()

```

11. Write a Python program to check whether a specified value is contained in a group of values.

```
group = [10, 20, 30, 40, 50]

value = int(input("Enter a value to check: "))

if value in group:
    print(f"{value} is in the group.")
else:
    print(f"{value} is not in the group.")
```

12. Write a python program to read three numbers (a,b,c) and check how many numbers between 'a' and 'b' are divisible by 'c'.

```
a = 3
b = 30
c = 3

count = 0

for i in range(a, b + 1):
    if i % c == 0:
        count += 1
print(f"There are {count} numbers between {a} and {b} divisible by {c}.")
```

13. Write a program to get a 4 digit pin number from the user. If the user enters 7878, display a message "Welcome to SBI Banking" else if the user enters any other number display a message "Enter a valid pin number". Expected Output: Enter the PIN: 7878 Welcome to SBI Banking Enter number2: 1024 Please enter a valid pin number

```
pin = int(input("Enter your SBI ATM PIN: "))
if (pin == 7878):
    print("Welcome to SBI Banking")
else:
    print("Wrong PIN")
```

14. Write a Python program to create a histogram from a given list of integers. Input: Character to print: \$ Format to print: 4162 Output: \$\$\$\$ \$ \$\$\$\$\$\$ \$ \$

```
ch = input("Character to print: ")
format_str = input("Format to print: ")

for i in format_str:
    num = int(i)
    print(ch * num)
```

15. . A hotel has a pricing policy as follows: a. 2 people: Rs.5000 b. 3 people: Rs.6000 c. 4 people: Rs.7000 Additional people (max 2 are allowed): Rs.500 per person If the customer is staying on company business, there is a 20% discount. If the customer is over 60 years of age, there is a 15% discount. A customer does not receive both discounts. Write a program to print the cost of the room for the given input

```
name = input("Enter Your Name: ")
age = int(input("Enter Your Age: "))
s = input("Are You a Business or Company Person? (Y/N): ")
p = int(input("Enter How Many People Are Going to Stay?: "))
a = int(input("Enter Additional People Count: "))

total_people = p + a

if total_people <= 2:
    rent = 5000
elif total_people == 3:
    rent = 6000
elif total_people == 4:
    rent = 7000
else:
    rent = 7000 + (total_people - 4) * 1000

if age >= 60:
    rent = rent - (rent * 0.15)

if s.upper() == "Y":
    rent = rent + (rent * 0.20)

print(f"\nHello, {name}!")
print(f"Total Rent to Pay: ₹{int(rent)}")
```