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Topic :Theory Python

Level 1

Q1) Guessing Game

```
import random

def main():
        number = random.randint(1, 10)
        player_name = input('Enter your name: ')
        print('You have 5 attempts to guess the number')
        no_guesses = 0

        while no_guesses < 5:
        guess = int(input('Enter a number to guess: '))
        no_guesses += 1

        if guess < number:
        print('Your guess is too low')
        elif guess > number:
        print('Your guess is too high')
        elif guess == number:
        print('You guessed the number in:', no_guesses, 'tries')
        exit()

if __name__ == '__main__':
        main()
```

Q2) Python program to find the Area of a Sector

```
def SectorArea(radius, angle):
        pi = 22 / 7
        # Constraint or Limit
        if angle >= 360:
        print("Angle not possible")
        return
        # Calculating area of the sector
        else:
        sector = (pi * radius ** 2) * (angle / 360)
        print(sector)
        return

# Driver code
radius = int(input('Enter radius of sector: '))
angle = int(input('Enter the angle of the sector: '))
SectorArea(radius, angle)
```

Q3) Simple Calculator Application

```
# Function to add two numbers
def add(num1, num2):
        return num1 + num2

# Function to subtract two numbers
def subtract(num1, num2):
        return num1 - num2

# Function to multiply two numbers
def multiply(num1, num2):
        return num1 * num2

# Function to divide two numbers
def divide(num1, num2):
        return num1 / num2

print("Please select operation -\n"
        "1. Add\n"
        "2. Subtract\n"
        "3. Multiply\n"
        "4. Divide\n")

# Take input from the user
select = int(input("Select operation from 1, 2, 3, 4: "))
```

```
number_1 = int(input("Enter first number: "))
number_2 = int(input("Enter second number: "))

if select == 1:
        print(number_1, "+", number_2, "=", add(number_1, number_2))
elif select == 2:
        print(number_1, "-", number_2, "=", subtract(number_1, number_2))
elif select == 3:
        print(number_1, "*", number_2, "=", multiply(number_1, number_2))
elif select == 4:
        print(number_1, "/", number_2, "=", divide(number_1, number_2))
else:
        print("Invalid input")
```

Level 2

Q1) Floor Square Root of a Number

```
def floor_sqrt(number):
        if number == 0 or number == 1:
        return number
        i = 1
        result = 1

        while result <= number:
        i += 1
        print('Value of i:', i)
        result = i * i
        print('Value of result:', result)

        # This loop will exit when the condition is false, so we decrement i by 1
        return i - 1

number = int(input('Enter a number to find floor sqrt of: '))
print(floor_sqrt(number))
```

Q2) Program to Find Area of Segment of a Circle

```
import math

pi = 3.14159

# Function to find area of segment
def area_of_segment(radius, angle):
        # Calculating area of sector
```

```
        area_of_sector = pi * (radius ** 2) * (angle / 360)
        # Calculating area of triangle
        area_of_triangle = 0.5 * (radius ** 2) * math.sin((angle * pi) / 180)
        return area_of_sector - area_of_triangle

# Driver code
radius = 10.0
angle = 90.0
print("Area of minor segment =", area_of_segment(radius, angle))
print("Area of major segment =", area_of_segment(radius, (360 - angle)))
```

END