Answer Sheet - Python

Name: Vinod Kumar

Phone No.: +91-7983059757

Email: vinodkmr51@gmail.com

Major Question 1   15 Marks

A) Write a program to print the following pattern:

```
*

* *

* * *

* * * *

* * *

* *

*
```

```python
for i in range(1, 4):
    for j in range(i):
        print('*', end=' ')
    print()
for i in range (4,0,-1):
    for J in range (i):
        print("*", end=" ")
    print()
```

B) Write a program to accept 5 even and 5 odd numbers from the user and display

- *sum of even numbers,*
- *product of odd numbers*
- *absolute difference of the sum and product.*

Check if the *final result is a prime number or not.*

```python
def is_prime(n):
    if n <= 1:
        return False
    for i in range(2, int(n ** 0.5) + 1):
        if n % i == 0:
            return False
    return True
# Accepting 5 even and 5 odd numbers from the user
even_numbers = []
odd_numbers = []


# Code block for accepting 5 even numbers from the user
for i in range(5):
    while True:
        num = int(input(f"Enter even number {i + 1}: "))
        if num % 2 == 0:
            even_numbers.append(num)
            break
        else:
            print("Please enter an even number.")
print ("Entered prime numbers are :",even_numbers)
# Code block for accepting 5 odd numbers from the user
for i in range(5):
    while True:
        num = int(input(f"Enter odd number {i + 1}: "))
        if num % 2 != 0:
            odd_numbers.append(num)
            break
        else:
            print("Please enter an odd number.")
print ("Entered odd numbers are :",odd_numbers)
```

```python
# Calculating sum of even numbers
sum_even = sum(even_numbers)
print("Sum of Even numbers is:",sum_even)


# Calculating product of odd numbers
product_odd = 1
for num in odd_numbers:
    product_odd *= num
print("Product of odd numbers:",product_odd)


# Calculating absolute difference of sum and product
absolute_diff = abs(sum_even - product_odd)
print("Absolute difference of sum of even numbers and product of odd numbers
is:",absolute_diff)


# Checking if the absolute difference is prime or not
if is_prime(absolute_diff):
    print(f"Absolute difference ({absolute_diff}) is a prime number.")
else:
    print(f"Absolute difference ({absolute_diff}) is not a prime number.")
```

C) Create a class named Item that holds data about an item in a retail store. The
   class should have the following three properties:

   - *name*: the name property is a String object that holds the name of the item.
   - *price*: the price property is a double variable that holds the item's retail price
   - *quantity*: the quantity property is an int variable that holds the number of
     units currently in inventory

Write four methods to retrieve the values from the three fields and their current inventory value

- *getName( )* returns the item name String
- *getPrice( )* returns the price of the item double
- *getQuantity( )* returns the number of quantities int
- *getValue( )* that returns the current inventory value (quantity * price) double

```python
class Item:
    def __init__(self,name,price,quantity):
        self.name = name
        self.price = price
        self.quantity = quantity


    def getName(self):
        return self.name


    def getPrice(self):
        return self.price


    def getQuantity(self):
        return self.quantity


    def getValue(self):
        return self.price * self.quantity
```

Major Question 2   **15 Marks**

A) Ask the user number of rows to be generated of a series. Suppose user enters
no. of rows = 5 then the series shall be :

9

99

999

9999

99999

```
number_of_rows = int(input("Enter number of rows: "))
for i in range(number_of_rows+1):
    for j in range(i):
        print("9",end = " ")
    print()
```

B) Write a program to accept a number from the user and check whether the
number entered is prime or not.

```python
# Defining a function to check if a number is prime
def is_prime(n):
  # If the number is less than 2, it is not prime
  if n < 2:
    return False
  # If the number is 2, it is prime
  if n == 2:
    return True
  # If the number is even, it is not prime
  if n % 2 == 0:
    return False
  # Iterate through all the odd numbers from 3 to the square root of n
  for i in range(3, int(n**0.5) + 1, 2):
    # If any of them divides n evenly, it is not prime
    if n % i == 0:
      return False
  # If none of them divides n evenly, it is prime
  return True


# Ask the user to enter a number
n = int(input("Enter a number: "))


# Check if the number is prime and print the result
if is_prime(n):
  print(n, "is a prime number.")
else:
  print(n, "is not a prime number.")
```

C) Continued from Major Question 1. Write a separate class called Inventory with methods

- *generate()* - creates three Item objects
- *getDetails()* - produces a neatly formatted table of the store's inventory displaying the three items, their current inventory value, and the total inventory value for the store.

```python
class Inventory:
    def __init__(self):
        self.items = []


    def generate(self):
        # Creating three Item objects
        self.items.append(Item("Stapler", 2.25, 15))
        self.items.append(Item("Paper", 32.99, 255))
        self.items.append(Item("Binder", 4.75, 9))


    def getDetails(self):
        print(f"{'Name':<15} {'Price':<10} {'Quantity':<10} {'Value':<20}")
        for i in range(22):
            print("=",end = " ")
        total_inventory_value = 0
        for item in self.items:
            item_value = item.getValue()
            total_inventory_value += item_value
            print(f"\n{item.getName():<15} {item.getPrice():<10.2f} {item.getQuantity():<10} {item_value:<20.2f}")
        print(f"\nTotal Inventory is: {total_inventory_value:.2f}")


# Example usage:
inventory = Inventory()
inventory.generate()
inventory.getDetails()
```