Answer Sheet - Python

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Major Question 1 **15 Marks**

A) Write a program to print the following pattern:

```
*
* *
* * *
* * * *
* * *
* *
*
```

Code:

```
def ptrn(num):
    for i in range(1,num):
        print(i*'*')
    for j in range(num,0,-1):
        print(j*'*')
ptrn(4)
```

Output:

jupyter Hackathon 2.0 (unsaved changes)

Logout

File Edit View Insert Cell Kernel Widgets Help Trusted Python 3 (ipykernel)

Run Code

In [14]:
```
def ptrn(num):
    for i in range(1,num):
        print(i*'*')
    for j in range(num,0,-1):
        print(j*'*')
ptrn(4)
```

```
*
**
***
****
***
**
*
```


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.*

Code:

```
# Accept numbers
user = list(map(int,input('Enter 5 even and 5 odd numbers: ').split()))
even_list, odd_list = [], []
summ, prod = 0,1
for num in user:
# Calculate the sum and product of even and odd numbers
    if num%2==0:
        even_list.append(num)
        summ+=num
    else:
        prod = prod * num
        odd_list.append(num)

# Calculate the absolute difference between the sum and product
diff = abs(summ - prod)

print(f'Even numbers are {even_list} and sum of even numbers is {summ}')
print(f'Odd numbers are {odd_list} and product of odd numbers is {prod}')
print(f'Absolute Difference of the Sum of even numbers and Product of odd numbers is
{diff}')
# Check if the final result is a prime number
for i in range(2, diff):
    if diff % i == 0:
        print("The final result is not a prime number.")
        break
else:
    print("The final result is a prime number.")
```

Output:

jupyter Hackathon 2.0 Last Checkpoint: 14 minutes ago (autosaved)

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In [2]:
```python
# Accept numbers
user = list(map(int,input('Enter 5 even and 5 odd numbers: ').split()))
even_list, odd_list = [], []
summ, prod = 0,1
for num in user:
# Calculate the sum and product of even and odd numbers
    if num%2==0:
        even_list.append(num)
        summ+=num
    else:
        prod = prod * num
        odd_list.append(num)

# Calculate the absolute difference between the sum and product
diff = abs(summ - prod)

print(f'Even numbers are {even_list} and sum of even numbers is {summ}')
print(f'Odd numbers are {odd_list} and product of odd numbers is {prod}')
print(f'Absolute Difference of the Sum of even numbers and Product of odd numbers is {diff}')
# Check if the final result is a prime number
for i in range(2, diff):
    if diff % i == 0:
        print("The final result is not a prime number.")
        break
else:
    print("The final result is a prime number.")
```

```
Enter 5 even and 5 odd numbers: 2 4 6 8 0 1 3 5 7 9
Even numbers are [2, 4, 6, 8, 0] and sum of even numbers is 20
Odd numbers are [1, 3, 5, 7, 9] and product of odd numbers is 945
Absolute Difference of the Sum of even numbers and Product of odd numbers is 925
The final result 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

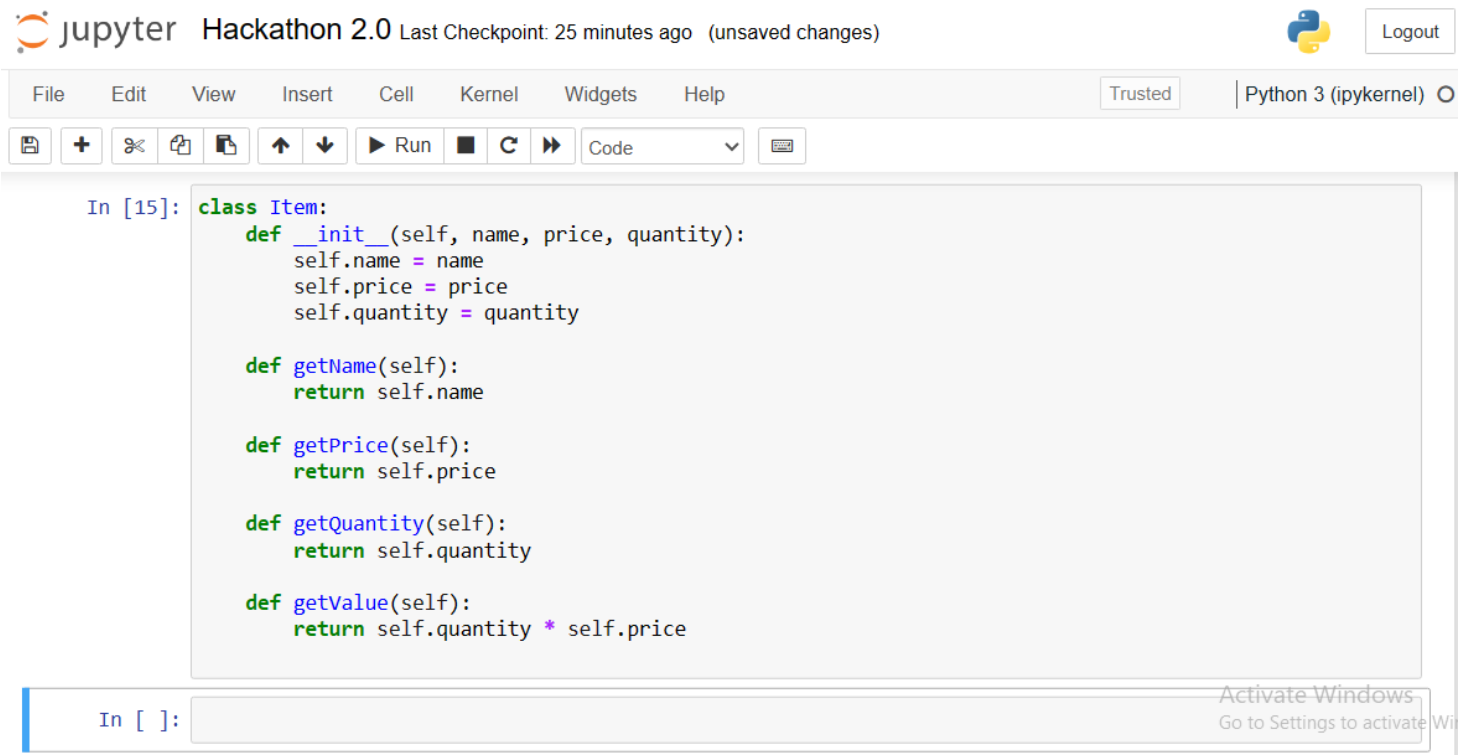
Write four methods to retrieve the values from the three fields and their current inventory value

- *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

Code:

```
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.quantity * self.price
```

Output:



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

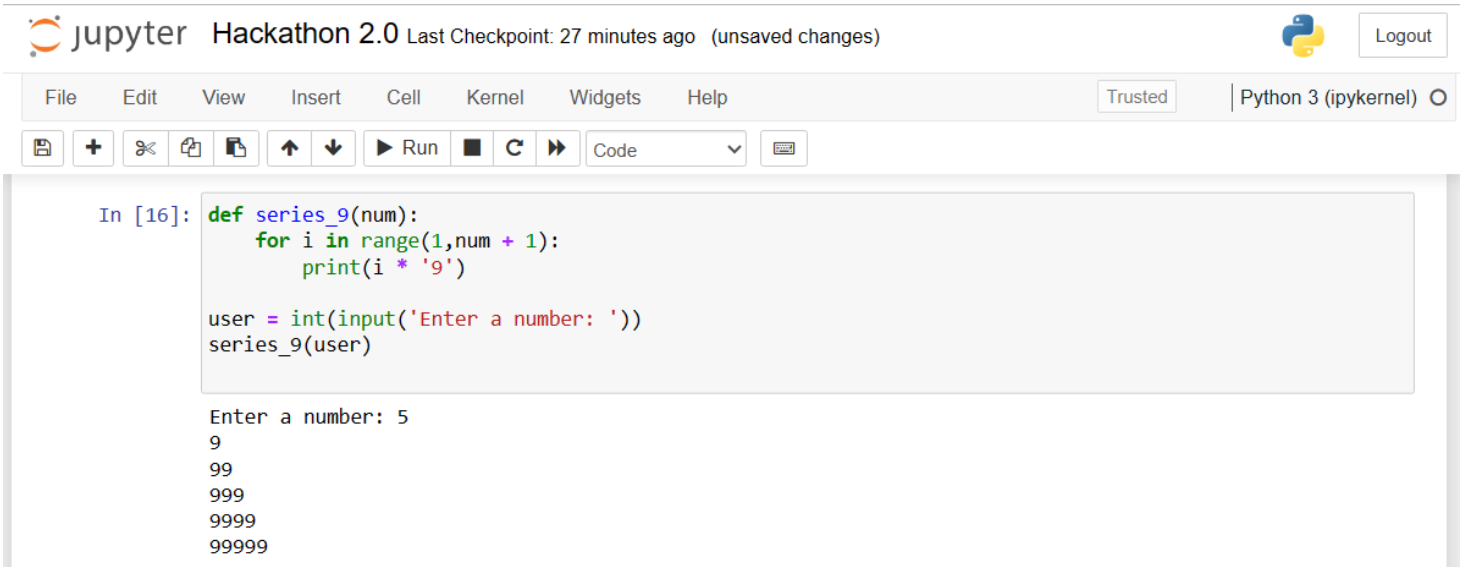
9999

99999

Code:

```
def series_9(num):
    for i in range(1,num + 1):
        print(i * '9')

user = int(input('Enter a number: '))
series_9(user)
```

Output:

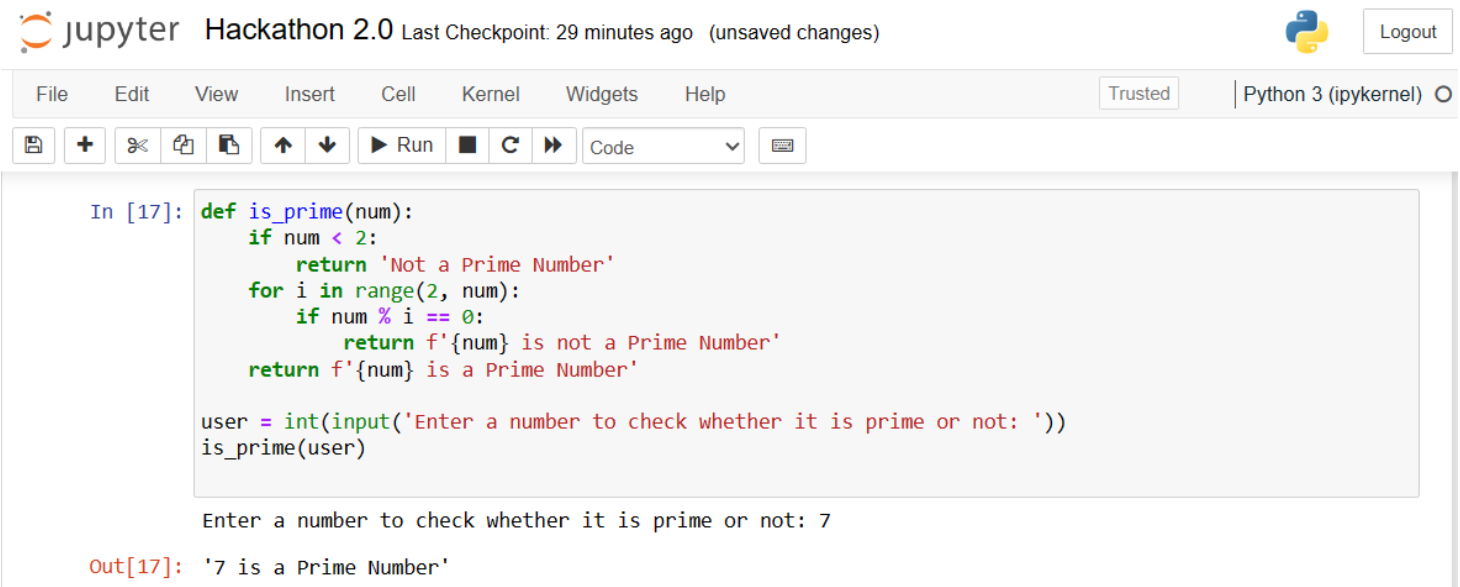


B) Write a program to accept a number from the user and check whether the number entered is prime or not.

Code:

```
def is_prime(num):
    if num < 2:
        return 'Not a Prime Number'
    for i in range(2, num):
        if num % i == 0:
            return f'{num} is not a Prime Number'
    return f'{num} is a Prime Number'


user = int(input('Enter a number to check whether it is prime or not: '))
is_prime(user)
```

Output:



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.

Name	Price	Quantity	Value
Stapler	2.25	15	33.75
Paper	32.99	255	8412.45
Binder	4.75	9	42.75

Total inventory is 8488.95

Code:

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

    def generate(self):
        # Create three Item objects
        item1 = Item("Stapler", 2.25, 15)
        item2 = Item("Paper", 32.99, 255)
        item3 = Item("Binder", 4.75, 9)

        self.items = [item1, item2, item3]
```

```
    def getDetails(self):
        total_value = 0

        # Print the table header
        print("Name\t\tPrice\t\tQuantity\tValue")
        print("==========================================")

        for item in self.items:
            name = item.getName()
            price = item.getPrice()
            quantity = item.getQuantity()
            value = item.getValue()

            # Print item details
            print(f"{name}\t\t{price}\t\t{quantity}\t\t{value}")

            total_value += value

        # Print total inventory value
        print(f"Total inventory is {total_value}")


# Test the classes
inventory = Inventory()
inventory.generate()
inventory.getDetails()
```

Output:

```
In [18]: class Inventory:
             def __init__(self):
                 self.items = []

             def generate(self):
                 # Create three Item objects
                 item1 = Item("Stapler", 2.25, 15)
                 item2 = Item("Paper", 32.99, 255)
                 item3 = Item("Binder", 4.75, 9)

                 self.items = [item1, item2, item3]


             def getDetails(self):
                 total_value = 0

                 # Print the table header
                 print("Name\t\tPrice\t\tQuantity\tValue")
                 print("==========================================")

                 for item in self.items:
                     name = item.getName()
                     price = item.getPrice()
                     quantity = item.getQuantity()
                     value = item.getValue()

                     # Print item details
                     print(f"{name}\t\t{price}\t\t{quantity}\t\t{value}")

                     total_value += value

                 # Print total inventory value
                 print(f"Total inventory is {total_value}")


         # Test the classes
         inventory = Inventory()
         inventory.generate()
         inventory.getDetails()

         Name            Price           Quantity        Value
         ==========================================
         Stapler         2.25            15              33.75
         Paper           32.99           255             8412.45
         Binder          4.75            9               42.75
         Total inventory is 8488.95
```