Assignment 3: Python Programs Using Loops

Question 1: Write a Python program to print your name, phone number, and email 10 times.

Code:

```
Python
for i in range (1,11):
    print("Manish")
    print("*******")
    print("+9168696869689")
    print("****************")
    print("mjha@outlook.in")
```

Output:

```
Manish
*******
+9168696869689
****************
mjha@outlook.in
Manish
*******
+9168696869689
****************
mjha@outlook.in
... (prints 8 more times)
```

Question 2: Write a Python program to print the multiplication table of a given number.

Code:

```
Python
a_str = input("enter the number for the multiplication")
a = int(a_str)
for i in range (1,11):
    print(f"{a} x {i} = {a * i}")
```

Sample Output:

```
enter the number for the multiplication: 5
5 x 1 = 5
5 x 2 = 10
5 x 3 = 15
5 x 4 = 20
5 x 5 = 25
```

5 x 6 = 30
5 x 7 = 35
5 x 8 = 40
5 x 9 = 45
5 x 10 = 50

Question 3: Write a Python program to compute the sum of squares of first n natural numbers.

Code:

Python
```
n = int(input("Enter the number : "))
sum = 0

for i in range (1, n+1):
    sum += (i**2)
print(sum)
```

Sample Output:

```
Enter the number : 5
55
```

Question 4: Write a Python program to compute the sum 1/1 + 2/3 + 3/5 + 4/7 + ... nth term.

Code:

Python
```
n = int(input("Enter the number : "))

sum = 0
for i in range (1, n+1):
    term = i / (2*i-1)
    sum += term

print(sum)
```

Sample Output:

```
Enter the number : 3
2.466666666666667
```

Question 5: Write a Python program to compute the sum of digits of a given number.

Code:

```
Python
num = int(input("Enter a number: "))
sum = 0
while num > 0:
    digit = num % 10
    sum += digit
    num = int(num /10 )
print(f"The sum of digits is: {sum}")
```

Sample Output:

```
Enter a number: 123
The sum of digits is: 6
```

Question 6: Write a Python program to check whether the given number is a palindrome or not.

Code:

```
Python
num = int(input("Enter a number: "))
original_num = num
reversed_num = 0
while num > 0:
    digit = num % 10
    reversed_num = reversed_num * 10 + digit
    num = num // 10
if original_num == reversed_num:
    print(f"{original_num} is a palindrome.")
else:
    print(f"{original_num} is not a palindrome.")
```

Sample Output:

```
Enter a number: 121
121 is a palindrome.
```

Question 7: Write a Program to check whether the given number is an Armstrong number or not.

Code:

```
Python
num = int(input("Enter a number: "))
original_num = num
num_digits = len(str(num))
sum_of_powers = 0
while num > 0:
    digit = num % 10
```

```
    sum_of_powers += digit ** num_digits
    num = num // 10
if original_num == sum_of_powers:
    print(f"{original_num} is an Armstrong number.")
else:
    print(f"{original_num} is not an Armstrong number.")
```

Sample Output:

```
Enter a number: 153
153 is an Armstrong number.
```

Question 8: Write a Python program to compute the factorial of a number.

Code:

```
Python
num = int(input("Enter a number: "))
if num < 0:
    print("Factorial is not defined for negative numbers.")
else:
    factorial = 1
    for i in range(1, num + 1):
        factorial *= i
    print(f"The factorial of {num} is: {factorial}")
```

Sample Output:

```
Enter a number: 5
The factorial of 5 is: 120
```

Question 9: Write a Python program to print prime numbers between a given range.

Code:

```
Python
lower = int(input("Enter lower range: "))
upper = int(input("Enter upper range: "))

print(f"Prime numbers between {lower} and {upper} are:")

for num in range(lower, upper + 1):
   if num > 1:
       for i in range(2, num):
           if (num % i) == 0:
               break
       else:
           print(num)
```

Sample Output:

Enter lower range: 10
Enter upper range: 20
Prime numbers between 10 and 20 are:
11
13
17
19

Question 10: Write a Python program to print first n Fibonacci numbers.

Code:

Python
```
n = int(input("Enter the number of Fibonacci terms to print: "))
a, b = 0, 1

print(f"\nFirst {n} Fibonacci numbers:")
for _ in range(n):
    print(a, end=" ")
    a, b = b, a + b
```

Sample Output:

Enter the number of Fibonacci terms to print: 10

First 10 Fibonacci numbers:
0 1 1 2 3 5 8 13 21 34

Question 11: Write a Python program to find the numbers, which are divisible by the sum of their digits.

Code:

Python
```
print("Numbers between 1 and 10000 divisible by the sum of their digits:\n")

for num in range(1, 10001):
    sum_of_digits = sum(int(digit) for digit in str(num))
    if sum_of_digits > 0 and num % sum_of_digits == 0:
        print(num, end=" ")
```

Output:

Numbers between 1 and 10000 divisible by the sum of their digits:

1 2 3 4 5 6 7 8 9 10 12 18 20 21 24 27 30 36 40 42 45 48 50 54 60 63 70 72 80 81 84 90 100 ... (and so on)

Question 12: Write a Python program to find the nearest number to 1000, which is less than 1000, and divisible by 18 and 32.

Code:

Python
```
for number in range(999, 0, -1):
    if number % 18 == 0 and number % 32 == 0:
        print(f"The nearest number to 1000, less than 1000 and divisible by both 18 and 32 is: {number}")
        break
```

Output:

The nearest number to 1000, less than 1000 and divisible by both 18 and 32 is: 864

Question 13: Write a Python program to check whether a given number is a perfect square or not.

Code:

Python
```
num = int(input("Enter a number: "))
if num >= 0:
    sqrt = int(num ** 0.5)
    if sqrt * sqrt == num:
        print(f"{num} is a perfect square.")
    else:
        print(f"{num} is not a perfect square.")
else:
    print("Negative numbers cannot be perfect squares.")
```

Sample Output:

Enter a number: 49
49 is a perfect square.

Question 14: Write a Python program to print the "nth" digit of a number from the right.

Code:

Python
```
num = int(input("Enter a number: "))
n = int(input("Enter the position 'n' from the right: "))

digit = (num // (10 ** (n - 1))) % 10

print(f"The digit at position {n} from the right is: {digit}")
```

Sample Output:

Enter a number: 18568
Enter the position 'n' from the right: 2
The digit at position 2 from the right is: 6

Question 15: Write a Python program to check whether the digits of a given number are equal.

Code:

```
Python
number = int(input("Enter a number to check its digits: "))
temp_num = number

reference_digit = temp_num % 10

while temp_num > 0:
    if temp_num % 10 != reference_digit:
        print(f"The digits of {number} are not equal.")
        break
    temp_num = temp_num // 10
else:
    print(f"All digits of {number} are equal.")
```

Sample Output:

Enter a number to check its digits: 2222
All digits of 2222 are equal.
