

Course: CS 307: Artificial intelligence

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Lab No 1

Install python IDE:

```
C:\Users\hp>python --version
Python 3.12.0

C:\Users\hp>pip -V
pip 23.2.1 from C:\Users\hp\AppData\Local\Programs\Python\Python312\Lib\site-packages\pip (python 3.12)
```

Numpy :

```
Python 3.12 (64-bit)
Python 3.12.0 (tags/v3.12.0:0fb18b0, Oct 2 2023, 13:03:39) [MSC v.1935 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> import numpy as np
>>>
>>> print("NumPy version:", np.__version__)
NumPy version: 1.26.0
>>>
```

Matplotlib:

```
>>> import matplotlib
>>>
>>> print("Matplotlib version:", matplotlib.__version__)
Matplotlib version: 3.8.0
>>>
```

Write python program to print multiplication table?

Program:

```
Python 3.12 (64-bit)
Python 3.12.0 (tags/v3.12.0:0fb18b0, Oct 2 2023, 13:03:39) [MSC v.1935 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> num = 5 # Replace 'num' with the desired number
>>>
>>> for i in range(1, 11):
...     print(num, 'x', i, '=', num * i)
...
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
>>>
```

Write python program check whether the given number or prime or not?

```
>>> # Function to check if a number is prime
>>> def is_prime(number):
...     if number <= 1:
...         return False
...     if number <= 3:
...         return True
...     if number % 2 == 0 or number % 3 == 0:
...         return False
...     i = 5
...     while i * i <= number:
...         if number % i == 0 or number % (i + 2) == 0:
...             return False
...         i += 6
...     return True
...
>>> # Take user input for a number
>>> try:
...     num = int(input("Enter a number: "))
...     if is_prime(num):
...         print(f"{num} is a prime number.")
...     else:
...         print(f"{num} is not a prime number.")
... except ValueError:
...     print("Invalid input. Please enter a valid integer.")
...
Enter a number: 8
8 is not a prime number.
>>>
```

Write python program to find factorial of given number?

```
>>> # Take user input for a number
>>> try:
...     num = int(input("Enter a number: "))
...     if num < 0:
...         print("Factorial is not defined for negative numbers.")
...     else:
...         fact = 1
...         for i in range(1, num + 1):
...             fact *= i
...         print(f"The factorial of {num} is {fact}")
... except ValueError:
...     print("Invalid input. Please enter a valid integer.")
...
Enter a number: 5
The factorial of 5 is 120
>>>
```