Lab-1 - Assignment

1. Create a program that takes two numbers as input, adds them, and prints the result. Ensure they handle cases where the inputs might be strings (requiring type conversion).

Code :

```
a = (int)(input("Enter the first number "))
b = (int)(input("Enter the second number "))

res = a + b

print("The sum is ", res)
```

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2. Write a program that calculates the area of a rectangle using user-input length and width, and then compare it with the area of a square with side length half of the rectangle's width.

Code :

```
l = (float)(input("Enter the length of the rectangle "))
b = (float)(input("Enter the breadth of the rectangle "))

rectangle_area = l * b

print ("The area of the rectangle: ", rectangle_area)

a = b / 2;

square_area = a * a

print ("The area of the square: ", square_area)

if (rectangle_area > square_area):
    print("Area of the rectangle is greater than that of the square")
else :
    print("Area of the square is greater than that of the rectangle")
```

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3. Write a program that takes an integer input, checks if it's even or odd, and prints a message accordingly. Additionally, use the modulo operation for this determination.

Code :

```python
n = (int)(input("Enter any number: "))

if ((n % 2) == 0):
    print("The entered number is even")
else:
    print("The entered number is odd")
```

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4. Create a Python program that functions as an advanced calculator. It should take user input for mathematical expressions and evaluate them, supporting basic operations, parentheses, and scientific notation.

Code:

```python
expression = (input("Enter any expression: "))

res = eval(expression)

print("Answer: ", res)
```

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5. Write a Python program to generate the Fibonacci series up to a specified number of terms. Use a while loop and branching to implement the logic.

Code:

```python
n = int(input("Enter the number of items: "))
a = 0
b = 1
while(n > 0):
    print(a)
    c = a + b
    a = b
    b = c
    n = n - 1
```

6. Create a program that takes user input and checks whether the entered number is a prime number or not. Utilize a for loop and branching statements.

Code:

```
n = int(input("Enter a number: "))
c = 0
for i in range(1, int(n / 2)):
    if(n % i == 0):
        c = c + 1
if(c > 2):
    print(n," is not prime")
else:
    print(n," is prime")
```