LAB 1

> Name : Rameez Anwar

> Reg No : B22F0150AI102

> Lab Instructor: Ms. Aneela Habib

1. Differentiate between assignment operator and equality operator:

- Assignment operator (“=”): It is used to assign a value to a variable. For example, x = 5 assigns the value 5 to the variable x.
- Equality operator (“==”): It is used to compare two values for equality. For example, x == 5 checks if the value of x is equal to 5.

2. Explore all kinds /data types of variables. And write code for each datatype.

```
# Integer variable: Whole number without any fractional part.
x = 5
print(type(x))
```

```
<class 'int'>
```

```
# Floating-point variable : A number with a fractional part.
y = 3.14
print(type(y))
```

```
<class 'float'>
```

```
# String variable:Sequence of characters
z = "Rameez Anwar"
print(type(z))
```

```
<class 'str'>
```

```
# Boolean variable: Represents a logical value and hold either true or false
a = True
print(type(a))
```

```
<class 'bool'>
```

3. Explain the rules for variables name and use different variables name including special characters , numbers etc

- Variable names must start with a letter or the underscore character.
- Variable names can only contain letters, numbers, and underscores (A-z, 0-9, and _).
- Variable names cannot start with a number.
- Variable names are case-sensitive. For example, x and X are two different variables.
- Reserved words cannot be used as a variable name.

```
#invalid variable name
@n="Rameez"
 9age=19
print(@name)
print(9age)
```

```
  File "<ipython-input-8-d368cbbcda8c>", line 3
    9age=19
    ^
SyntaxError: invalid decimal literal
```

Next steps: Fix error

4. Declare and initialize multiple variables in a single line . Single variable with multiple values , multiple variables with single values. Each having at least two examples

```
# Single variable with multiple values
name= "Rameez","Ahmed","Ali";
print(name)
```

```
('Rameez', 'Ahmed', 'Ali')
```

```
score=10,122,144;
print(score)
```

```
(10, 122, 144)
```

```
#multiple variables with single values
x, y, z = 10, 20, 30
print(x,y,z)
```

```
10 20 30
```

```
name, city, country = "Rameez", "Abbottabad", "Pakistan"
print(name,city,country)
```

```
Rameez Abbottabad Pakistan
```

5. Perform arithmetic operations on integers and floating-point numbers

- Adding, Subtracting, Multiplication and dividing two integer variables
- Adding, Subtracting, Multiplication and dividing floating-point variables

```
# Adding, Subtracting, Multiplication and dividing two integer variables
a = 5
b = 3
print(a + b)
print(a - b)
print(a * b)
print(a / b)
```

```
8
2
15
1.6666666666666667
```

```
# Adding, Subtracting, Multiplication and dividing floating-point variables
x = 3.14
y = 2.71
print(x + y)
print(x - y)
print(x * y)
print(x / y)
```

```
5.85
0.43000000000000016
8.5094
1.1586715867158672
```

* 6. A string literal is a sequence of characters enclosed in quotes. In Python, we can use either single quotes ('...') or double quotes ("...") to create a string. *

- Using single quotes
- Using double quotes
- Using double quotes when the string contains a single quote
- Using single quotes when the string contains double quotes

```
# Using single quotes
s1 = 'Hello, World!'
print(s1)
```

```
Hello, World!
```

```
# Using double quotes
s2 = "Hello, World!"
print(s2)
```

```
Hello, World!
```

```
# Using double quotes when the string contains a single quote
s3 = "It's a beautiful day"
print(s3)
```

```
It's a beautiful day
```

```
# Using single quotes when the string contains double quotes
s4 = 'He said, "Hello, World!"'
print(s4)
```

```
He said, "Hello, World!"
```

7. The print() function is a built-in function in Python that allows you to output variables and other data to the console.

- Example of using the print() function to output a variable
- Example of outputting multiple variables with print()
- Example of using f-strings to format output
- Example of using f-strings to manipulate variables in output

```
# Example of using the print() function to output a variable
x = 5
print(x)
```

```
5
```

```
# Example of outputting multiple variables with print()
x = 5
y = 3
print(x, y)
```

```
5 3
```

```
# Example of using f-strings to format output
name = "Ali"
age = 21
print(f"Hello, {name}! You are {age} years old.")
```

```
Hello, Rameez! You are 21 years old.
```

```
# Example of using f-strings to manipulate variables in output
x = 5
y = 3
print(f"The sum of {x} and {y} is {x + y}.")
```

```
The sum of 5 and 3 is 8.
```