

# Assignment: Manipulating Integer Values

## COR 100.13/Year One "Game Programming with Python"

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September 16, 2024

### Instructions

For each task below, write Python code that solves the problem. You should include comments in your code explaining each step and make sure to test your code thoroughly. Submit your solutions as a single Python script (.py) or Jupyter notebook (.ipynb) file.

### Task 1: Basic Arithmetic

Write Python code to perform the following arithmetic operations and display the results:

1. Add 12 and 8.
2. Subtract 5 from 20.
3. Multiply 7 by 6.
4. Divide 18 by 3.
5. Calculate the result of 3 raised to the power of 4.

```
print(12 + 8) # 20
print(20-5) # 15
print(7 * 6) # 42
print(18/3) # 6.0
print(3**4) # 81 = (3 * 3 * 3 * 3)
```

```
20
15
42
6.0
81
```

## Task 2: Variable Manipulation

1. Assign the value 10 to a variable called x and the value 20 to a variable called y.
2. Add x and y together and store the result in a variable called z.
3. Print the values of x, y, and z.
4. Change the value of x to 15, and update z to reflect the new sum of x and y.
5. Print the updated values of x, y, and z.

```
x = 10
y = 10
z = x + y
print("x = ", x)
print("y = ", y)
print("z = ", z)
```

```
x = 10
y = 10
z = 20
```

## Task 3: Working with Expressions

Evaluate the following expressions in Python and print the results:

1.  $(5 + 3) * 2$
2.  $10 - (4 * 2) + 1$
3.  $8 / 2 + 5 * (2 + 1)$

4.  $3 + 5 * (2 + 4) - 6$

```
print((5 + 3) * 2) # 8 * 2 = 16
print(10 - (4 * 2) + 1) # 10 - 8 + 1 = 3
print(8 / 2 + 5 * (2 + 1)) # 4 + 5 * 3 = 19.0
print(3 + 5 * (2 + 4) - 6) # 3 + 5 * 6 - 6 = 3 + 30 - 6 = 27
```

```
16
3
19.0
27
```

## Task 4: Error Handling

1. Intentionally introduce a syntax error by writing incomplete code (e.g., `5 +`).
2. Explain why the error occurs in a comment above your code.
3. Fix the error and re-run your code.

```
## the following expression is incomplete:
## the + operator is binary and needs a right hand value
# wrong: 5 +
print(5 + 5)
```

```
10
```

## Task 5: Bonus Challenge (Optional)

Write Python code that asks the user to input two integer values. Then, compute and display the sum, difference, product, and quotient of the two numbers. Make sure to handle any potential division by zero errors using error handling.

Tip: the following code block gets the value for `x` and `y` from the keyboard:

```
x = input("Enter value for x: ")
y = input("Enter value for y: ")
print("You entered:", x, "and", y)
```

Running the code in Colab:

```
✓ [2] 11s x = input("Enter value for x: ")
        y = input("Enter value for y: ")
        print("You entered:", x, "and", y)

Enter value for x: 100
Enter value for y: 100
You entered: 100 and 100

Keyboard input is stored as a string and needs to be converted to numbers for arithmetic operations:

✓ 0s x1=int(x)
    y1=int(y)
    print(type(x1),type(y1))

Enter <class 'int'> <class 'int'>

✓ 0s print("Sum = ", x1 + y1)
    print("Difference = ", x1 - y1)
    print("Product = ", x1 * y1)
    if y1 == 0:
        print("Quotient = undefined")
    else:
        print("Quotient = ", x1 / y1)

Enter Sum = 200
Difference = 0
Product = 10000
Quotient = 1.0
```

## Submission

Submit a link to your complete Google Colab notebook file with all tasks solved. Make sure to include comments explaining your code.