

**CMPSC-132: Programming and Computation II**  
Fall 2018

## Homework 3

Due Date: 10/20/2018, 11:59PM

100 pts

### Instructions:

- The work in this assignment must be completed alone.
- The file name must be HW3.py (incorrect name files will get a -10 point deduction)
- When any function returns an error, it must be a string containing "error"
- **Do not include test code outside any function in the upload. Remove all your testing code before uploading your file. That includes user-defined input()**

### Goal:

Modify the function *calculator(expr)* so that it supports exponentiation. This operation will be represented in the string as  $^$  unlike Python's `**`. An example of a valid expression is `"-5 + 60 / 3^3 * 4 - 2 * 4^2"`. In this assignment, more than one consecutive exponentiation is not supported.

Notes:

- This is a straight
  - You will also ha
  - In your submissi
- isNumber, getNextNumber and exeOpr)

Function requirements:

- ✓ The function must **return** the computed value if *ex* otherwise it must return an error message.
- ✓ When any function returns a numeric value, it must be float
- ✓ Do not use *exec* or *eval* function. You will not receive credit if your program uses any of the two functions anywhere
- ✓ All five functions from HW2 must work

Grading Notes:

- The grading script will feed 5 randomly chosen test inputs, each for 20 points. One of them will be an input that should cause an error such as `"4 * / 2 + 5 ^"`, whose expected returned value is an error message.

Example:

```
>>> calculator("-5 + 60 / 3^3 * 4 - 2 * 4^2")
-28.11111111111111
>>> calculator("4^2 / 2^2")
4.0
>>> calculator("-4^ / 2^2")
'error'
```

### Deliverables:

- Include all the functions in your script named HW3.py. Submit it to the HW3 CANVAS assignment before the due date