MA305 – Classwork 2.

Numbers, Variables, Arithmetic Operations & Strings

Due: 09/20/2018

Write your name, classwork/lab number and date in each Python script.

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1. Create a script in Python (name it "cw2a.py") that evaluates the following expressions. Label each evaluation with a comment and use appropriate variables.

a. Find the volume of the cylinder of diameter 3.4 and height 4.6.

$$V = \pi r^2 h$$

b. Find the total resistance of three resistors $r_1 = 100$, $r_2 = 200$ and $r_3 = 300$ in parallel.

$$R = \frac{1}{\frac{1}{r_1} + \frac{1}{r_2} + \frac{1}{r_3}}$$

c. For $r = -0.3$ and $\theta = \frac{3\pi}{4}$, evaluate the expression below.

$$y = e^r \cos(\theta) + e^{2r} \sin(2\theta)$$

2. Create a script in Python (name it "cw2b.py") that accepts a temperature in Celsius and displays the temperature converted to Fahrenheit. Convert the temperature (C): -40, 0, 30, 100

$$F = (9/5)C + 32$$

3. Make a log of your work using the Unix command `script`.

a.
```
$ script                          [you will see "Script started, file is typescript"]
$ cat cw2a.py                                  [ display the file "cw2a.py" ]
$ chmod u+x cw2a.py                [ set executive permission to the user ]
$ ./cw2a.py                                    [ run the Python script ]
...
$ exit                                         [ exit from script ]
```

b. Edit and CLEAN up the typescript file.
Note: To remove all those annoying `^M` control characters from the typescript file: type the following in the command line within `vi`:
`:1,$s/^V^M//g` (`^V^M` is [CTRL V CTRL M])
This says in lines 1 to last($), substitute `^M` by nothing, globally (all occurancies in a line). The `^V` allows insertion of the control character `^M`.

Similarly,
`:1,$s/^V^H//g` (CTRL V CTRL H) substitutes `^H` (backspace) by nothing.

c. Rename file "typescript" to something like "cw2script.txt".

4. *Send us an email message with the "cw2script.txt" file as an attachment directly with the following mail command.*

```
$ mail -s "305:cw2" 305 < cw2script.txt
```

5. *Submit your codes "cw2a.py" and "cw2b.py" through your course Canvas.*