Northern Michigan University (Marquette Co, MI)

CS202-02-25F: Python (Andrew A. Poe) Name: _____
Endterm Examination (Exam 2) Page 1/2 Friday 5 December 2025 2:00 P.M. EDT

Time: 50 minutes.

1. Write a Python method (NOT a whole program):

`def MatchTopRow (n) :`

Interpreting n specifically as a list of list of numbers, this should return True is there is a row of the table (other than the top one) that exactly matches the top one. False if there is no such row. I don't care if other rows match each other or not. I only care if something matches the top row.

For example, if n were

3	2	1	4
2	5	8	6
3	2	1	4

would return True, since the bottom row also happens to be [3,2,1,4].

```
def MatchTopRow (n) :

      for r in range (1,len(n)) :
            matches = 0
            for c in range (len(n[0])) :
                  if n[0][c] == n[r][c] :
                        matches += 1
                  if matches==len(n[0]) :
                        return True
      return False
```

2. Write Python code that draws a regular pentagon on the screen. (Five sides, each angle is 108º.) Make each side 100 units long.

```
from turtle import *

for i in range (5) :
      forward (100)
      left (72)
mainloop ()
```

3. Write Python code that chooses a random point in the drawing window and draws an "hourglass" (two triangles sharing a vertex, also called a "bowtie") at that location.

```
rows = screensize()[1]
cols = screensize()[0]

r = random()*rows-rows/2
c = random()*cols-cols/2
```

```
up()
goto (r,c)
down()
forward (200)
left (120)
forward (100)
left (120)
forward (200)
right (120)
forward (100)
mainloop()
```

4. Write Python code that does the following:

Open a file "endterm.in" and a file "endterm.out" for writing. endterm.out should duplicate every character in endterm.in EXCEPT for the newline characters at the end of lines. Those should only appear once in the output.

For example, if the input file contained,

This morning, for breakfast,
I had two bowls of granola.

The output file would contain

TThhiiss mmoorrnniinngg,, ffoorr bbrreeaakkffaasstt,,
II hhaadd ttwwoo bboowwllss ooff ggrraannoollaa..

```
infile = open ("endterm.in","r")
outfile = open ("endterm.out","w")
line = infile.readline()
while (line != "") :
            for i in range (len(line)-1) :
                        outfile.write (line[i])
                        outfile.write (line[i])
            outfile.write("\n")
            line = infile.readline()
infile.close()
outfile.close()
```