

CS-UY 1114 / Python

First Midterm Exam – 6 March 2018
Prof. Katz

Name: _____

NetID(first part of email): _____

- Duration: 1 hour and 15 minutes
- **DO NOT WRITE ON THE BACK OF ANY PAGE!**
- Do not separate any page.
- **Please do not use pencil**, if you must, write darkly, these pages will be scanned
- If you write an answer other than in the space provided, please indicate, in the space provided, where we can find that answer
- **Please circle your answer for questions 1-4**
- This is a closed book exam, no calculators are allowed
- You can expect that the user inputs the appropriate values (int/float/etc where required).
- Comments are not required
- Anyone found cheating on this exam will receive a zero for the exam.
- Anyone who is found writing after time has been called will receive a zero for this exam.
- Do not open this test booklet until you are instructed to do so.
- If you have a question please ask the proctor of the exam!
- You may use **ONLY** the following Python constructs and functions!

(all math operators)	If,elif,else	for
(all conditional operators)	while	ord
math.* (all in math module)	int	chr
random.* (all in random module)	print	input
turtle.* (all in turtle module)	len	str

Name _____

Net ID: _____

1) (15 points; 5 each) Perform the following conversions

- a. Convert the binary number (10100111) to decimal: _____
(Do calculations here):

- b. Convert the decimal number (195) to hexadecimal: _____

- c. Convert the hexadecimal number (17) to binary: _____
(please show all 8 bits)

2) (10 pts) What is the output from the following code?

```
var = 10;
acc = 0;
for i in range(1,var):
    if i%3==0:
        acc = i**2;
    else:
        acc +=i;
print("The answer is: ",acc);
```

The answer is: _____

3) (10 Points) What is the output from the following code?

```
acc = 0;
for i in range(5,15,5):
    var = i;
    while var>0:
        var//=2;
        acc+=var;
        print("i=",i," var=",var);

print("acc=",acc);
```

4) (15 Points) What is the output from the following code?

```
x = 24;
y = 52;
while y != 0:
    temp=y;
    y = x%y;
    x = temp;
    print("x=",x,"y=",y);
print(x);
```


- 5) (30 points) Given a positive integer number, write a program to print the total number of times each digit between 0 and 9 appears in the number. If a given number does not appear in the input, do not print a zero for that value. Leading zeros will be dropped, as is usual with an int. (Note, no credit will be granted for using string processing, the input and processing must be done as an Integer!!!!)
(the following are some examples)

What is your number: 123 1 appears 1 time(s). 2 appears 1 time(s). 3 appears 1 time(s).	What is your number: 0121139 1 appears 3 time(s). 2 appears 1 time(s). 3 appears 1 time(s). 9 appears 1 time(s).
What is your number: 100 0 appears 2 time(s). 1 appears 1 time(s).	What is your number: 20180306 0 appears 3 time(s). 1 appears 1 time(s). 2 appears 1 time(s). 3 appears 1 time(s). 6 appears 1 time(s). 8 appears 1 time(s).

Name _____ Net ID: _____

6) (20 points) An approximate value of pi can be calculated with a series as below:

$$\pi = 4 * [1 - 1/3 + 1/5 - 1/7 + 1/9 \dots + ((-1)^n)/(2n+1)]$$

Write a program to ask the user for a value of n and print the resulting value of pi as calculated using the above.

Name _____

Net ID: _____

SCRAP

Name _____

Net ID: _____

SCRAP

Name _____

Net ID: _____

SCRAP

