CMSC 201 - Fall 2023 Midterm I

Circle your section number and TA.

11 - Anna Pham 12 - Alexander G. 13 - David P. 14 - Rusham B.

15 - Gabe A. 16 - Malcolm D.

21 - Alexander J. D. 22 - Matthew P. 23 - Kelvin Z. 24 - Nathan D.

25 - Khushika Shah 26 - Claire Kim 27 - Ky DeSilva

31 - Adrian Maldonado 32 - Lyna Beraich 33 - Claire Kim 34 - Rodolfo A-R

35 - Raine Gibson 36 - Hannah Oskam 42 - Hikaru B. 43 - Gia O.S.

44 - Hieu T. 45 - Sean H. 46 - Pranav S.

51 - Wojciech L. 52 - Wojciech L. 53 - Papa M. 54 - Drake T.

55 - Hannah Oskam 56 - Leann A. 58 - Niraj D.

Write your name (neatly!) on the line below.



First Name Last Name

sdonahue

Student ID, which you use for GL

Undergraduate Honors Statement

In this course, each student assumes the responsibilities of an active participant in UMBC's scholarly community, in which everyone's academic work and behavior are held to the highest standards of honesty. Cheating, fabrication, plagiarism, and helping others to commit these acts are all forms of academic dishonesty, and they are wrong.

Multiple Choice: 24 points (2 points each)

Choose the correct answer by clearly filling exactly one circle per problem.

	our our transfer of the production of the produc
1.	Which statement evaluates to True ?
	True and (False or False) — True and (False) — False False or (True and not False) — False or (True and True) & True True and False — False not (False or not False) — not (False or True) — not (True) & False
2.	Which loop cannot be used to modify the element of a list? for-each (for x in my_list) \(\tau \) uses elements (pass by value) for-i (for i in range(len(my_list))) \(\text{value} \) while (while i < len(my_list)) \(\text{value} \) uses. Indexes (pass by reference)
3.	Which variable is legal in Python (will not cause a syntax error)?
	 32number hello_there \$perl_is_good _lgoodVariable
4.	When running a while loop, in order to avoid an infinite loop you must:
	 ○ Set all variables to zero. → No ○ Make sure none of the variables inside the loop changes. → would not help ⑤ Change a variable or take user input to see if the while condition changes. ○ Not do any input inside of the loop. → largely irrelevant
5.	To check if an integer x is divisible by 7 you would use:
	$0 \times \% = 0$ $0 \times $
6.	Why is / different from //?
	 ○ Because x // y gives back a remainder rather than the quotient. ○ Because // is the symbol for a comment. ○ Because // is the symbol for modulus. ○ Because // is integer division rather than floating point division.

(see lecture notes for full list of) operations

use?	ou know how many times you want to iterate, which of the following will you (most likely)
	For loop. To toops to iterate through list or range, with while loop.
\bigcirc	Print loop prot a real thing unknown number of times
\bigcirc	Print loop prot a real thing unknown number of times (based on boolean condition)
8. How	many times will this loop execute for x in range $(3, 12, 2)$?
\bigcirc	9 3 Start Stop step 3 (inclusive) (exclusive)
\bigcirc	3 (inclusive) (exclusive)
\bigcirc	7 5, 7, 9, 11
	5
9. Whe	en "Zero" is cast to an integer, what happens?
\circ	The integer that results is 0 as an integer. The program will hang (not terminate but not crash). An error will occur which terminates the program. The integer that results is 0.0 as a float. Int ("zero") The error The integer that results is 0.0 as a float.
\bigcirc	The program will hang (not terminate but not crash).
	An error will occur which terminates the program.
\bigcirc	The integer that results is 0.0 as a float.
10. Whi	ch of the following is True ?
	'he' in 'hello world'. I true (in is substring check)
\bigcirc	$3 \text{ in } [1, 2, 5] \rightarrow \text{NO}_1 3 \text{NOT} \text{NOT}$
\bigcirc	'sam' in 'swarm' ~ no, 'sam' not in 'swarm'
\bigcirc	0 in 'Zero' - no, int (0) not in string "Zero"
	most how many elif statements will execute in a single if statement?
\circ	0 EIA
	1 elf 7 only one will run. mutually exclusive!
\bigcirc	∞ ese mutually exclusive:
\bigcirc	-3
12. How	many elif statements can you write in a single if statement?
\circ	0
\bigcirc	1 as would like -
\bigcirc	1 But you can write as many as you'd like =
	As many as you can type in.

List Manipulation: 6 points (2 points each)

For the following three problems consider this list:

write "NO OUTPUT" and if there is an error of any kind from SyntaxError, IndexError, ValueError, just write "Error."

Each part should be considered independently, meaning you should restart from the starting list every time.

13. print(robots[5], robots[len(robots) - 4])

HAL 9000 RZDZ

14. robots.remove('R4') V not in list print(robots)

ELLOL

15. robots.append('Bender') - add new element, print(len(robots)) 11st 15 now one longer (6-7)

Creating Boolean Expressions: 4 points (2 points each)

16. Write an expression that is True if and only if a string food contains 'cheese' (as a substring) and drink is not 'water'.

"cheese" in food and drink != "water"

17. Write an expression that is True if and only if x is at least 30 and y is between 1 and 10 (inclusively).

x 7= 30 and (y 7= 1 and y <= 10)

Short Answers: 6 points (2 points each)

18. What are the two possibilities that can happen based on different inputs of x?

```
x = int(input('Input int: '))
while x > 0:
print('hello')

(A X 7 O -> run forever

(100p condition always true)

otherwise never print anything
```

19. Explain what happens when we replace an if with an elif statement instead. What is the difference between the two? For instance consider the code below:

```
num = int(input('>>'))

if num > 10:

print('num is larger than 10')

if num > 20:

print('num is larger than 20')

elf will make the if lelf mutually

exclusive, so it will only print one or the

other. Right now with two if statements,

they and both run (e.g., num = 30).
```

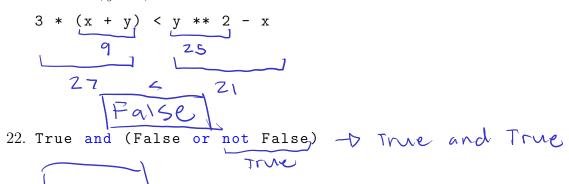
20. Fill each blank with the a word conveying the meaning of the argument in the range.

range(Stout	Stop	step)
range(start	Stop)	•
range(Stop)		

Order of Operations: 3 points (1 points each)

Evaluate the following expressions.

21. Let x = 4, y = 5, then:





23. not [] and not (5 or 'a')

Falsey

Truthy

not false and not true

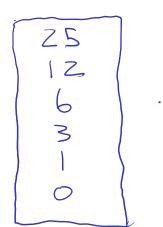
True and False

Code Evaluations: 6 points (2 points each)

Evaluate each code snippet below and answer the question asked. You may assume that the code is syntactically correct. Make sure that you pay attention to the formatting of the output when you write down your answer. Mark your final answer clearly by boxing it.

24. When the code is run, what is the output?

```
halving = 50
while halving > 0:
  halving //= 2 integur
print(halving) division
 divide by two while halving 70, print
```

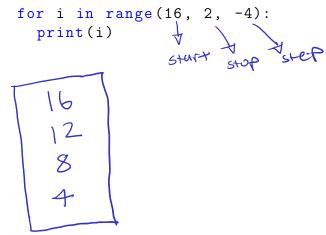


25. When the code is run, what is the output?

```
s = 'hello'
                                   is equal to 3 times 5
                               15
if n == 20 and s == 'hello':
 print("Both are true.")
elif n == 15: -> True
 print("15 is equal to 3 times 5")
elif s == 'hello'
 print("Well Hello There")
 print ("Obi Wan Kenobi, You're my only hope") the rest are skipped
```

after first condition in itlelitlelse is executed

26. When the code is run, what is the output?



Debugging: 12 points (1 point per line, 2 points per correction)

The code below has 6 errors. The errors may be syntax errors or logic errors, consider all errors that occur in one line as a single error; examine the code carefully to find them. Indicate each of the errors you find by writing the line number and correction in the space provided below. Each error can be solved with a single fix, and should not be counted twice. Comments do not contain errors. The direction of the string symbols are not an error.

27. You must find and correct 4 of the errors. (You cannot fix more than 4 errors!)

```
1
2
    We will remove all of the bad symbols, which are in the
3
    bad_symbols list from the strings in the_list. We will
    count the number of removals and report them.
4
5
  # the lists do not contain errors
6
  bad_symbols = ["!", "@", '#', '$', '%', '^', '&', '*',
          '(', ')', ',', '.']
8
  the_list = ['hello', '&(*Byte', 'Kilobyte!', 'S$u@s!h#i']
9
10 # start here
11 \text{ new\_list} = []
  removed_symbol = 0
for the_string in the_list
new_string = ''
    14
15
16
17
      elif) of should be else
        removed_symbol +1 4 needs to be
18
19
    new_list.append(the_string) New value
20
                           I should be new-string
21
  print(', '.join new_list )
23 print(f'We removed {removed_symbol} bad symbols')
```

Line Num.	Your correction for that error.
15	negate condition (not in)
17	usu else, not elip
19	use +z to save new count
20	append new-string, not the string

Programming Problem No. 1: 7 points

28. Input a list of integers (you are allowed to assume that the user will only type integers) until the user types zero. Output a list where the even numbers are squared from what was input but the odd numbers are left alone.

For instance if you input the numbers 21, 13, 8, 3, 2, 6, 17, 0 then the program will output [21, 13, 64, 3, 4, 36, 17].

if __name__ == '__main__':

num_list = []

user_int = int (input())

if user_int != 0:

if user_int o/o z == 0:

num_list append (user_int)

else!

num_list append (user_int)

vser_int = int(input())

print (num_list)

print (num_list)

Programming Problem No. 2: 7 points

29. Write a program after the beginning code that takes the string_list and determines the string with the maximum number of "a" characters. For instance if the user enters "archibald" "aardvark" "sandal" "stop" then aardvark will be printed since it has the most "a" characters. Notice we have already converted the strings to lower case so you don't have to worry about that.

```
if __name__ == '__main__':
 string_list = []
 s = input("Enter a string: ")
 while s != "stop":
   string_list.append(s.lower())
   s = input("Enter a string: ")
 # begin your code here
 max - \alpha - str = n
 max - as = -1
 for string in string-11st!
    a - (ount = 0
    for letter in string!
       if letter == "a"!
           a-count += 1
    if a _ count > max-as:
       max-as=a-count
       max-as-str = string
```

4 empty string
4 -1 so that
any string will
be our new max

Court a's in

current string

if we had the
most a's, save
our string to
max - as str