CS 301 - Spring 2017

Instructor: Laura Hobbes LeGault

Midterm Exam 1 — 16.67%

(Last) Surname: _____ (First) Given name: _____

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IMPORTANT: Answers for Dual and Multiple Choice questions *must* be marked on a scantron. The answer marked on the scantron will be the only answer graded.

Fill in these fields (left to right) on the scantron form (use #2 pencil):

1. LAST NAME (surname) and FIRST NAME (given name), fill in bubbles
2. IDENTIFICATION NUMBER is your Campus ID number, fill in bubbles
3. Under ABC of SPECIAL CODES, write 001 (morning lecture), fill in bubbles
4. Under F of SPECIAL CODES, write A (exam version), fill in bubble 0

I certify that I will keep my answers covered and do my best to not allow my exam paper to be viewed by another student during the exam or prior to completion of their exam. I also certify that I have not viewed or in any way used another's work in completing my answers. I understand that being caught allowing another to view my work or being caught viewing another's work are both violations of this agreement and either will result in automatic failure of the course and an academic misconduct letter to the Deans Office for myself and any other individuals involved.

Signature: _____

The following exam has 25 questions and is worth a total of 42 points. You will have 50 minutes to complete the exam. **Be sure to read through every question completely.**

1. **Dual Choice** — 12 questions worth 1 point each. Choose the *best* answer.
2. **Multiple Choice** — 9 questions worth 2 points each. Choose the *best* answer.
3. **Fill-in-the-blank** — 4 questions worth 3 points each. Be complete.

You may not use notes or books, your neighbors, or calculators or any other electronic devices on this exam. **Turn off and put away** any portable electronics now.

Disclaimer: the following are provided for your reference only, and the inclusion of information here does not guarantee it will be used on the exam.

Operator Precedence Table:

level	operator	description
higher	`( <expression> )`	grouping with parentheses
	`x[index]`	indexing
	`* / %`	multiplicative
	`+ -`	additive
↕	`< <= > >=`	relational
↕	`== !=`	equality
	`not`	logical not
	`and`	logical and
lower	`or`	logical or
	`= += *=`	(compound) assignment

Built-in functions:

`input(p)`	Prompts the user for input using `p` and returns the user's input.
`raw_input(p)`	Prompts the user for input using `p` and returns the user's input as a string.
`len(s)`	Return the length (the number of items) of an object.
`type(x)`	Returns the *data type* of the value stored in `x`.
`int(x)`	Returns the integer representation of `x`. `ValueError` if not possible.
`float(x)`	Returns the float representation of `x`. `ValueError` if not possible.
`str(x)`	Returns the string representation of `x`.

Constants and functions from the math module:

`math.sqrt(x)`	Returns the square root of `x` as a `float`.
`math.pow(x,y)`	Returns `x` raised to the power `y`. Converts both arguments to `float`s.
`math.pi`	The mathematical constant $\pi = 3.1415...$

Functions from the random module:

`random.randint(a,b)`	Return a random integer N such that `a <= N <= b`.

Dual Choice: Terminology

1. A local variable in a function _____ be directly accessed outside the function. (1)

   A. can
   B. cannot

2. Displaying the result of a program on a monitor is an example of _____. (1)

   A. input
   B. output

3. In a function header, the parentheses contain the function's _____. (1)

   A. arguments
   B. return types

4. To test two mutually-exclusive situations using **one** condition, use _____. (1)

   A. `if ... else`
   B. `if ... elif`

5. The operation which returns the remainder after division is called _____. (1)

   A. concatenating
   B. modulo

6. Which of the following actions should you take in this loop to ensure it is **not infinite**? (1)

```
x = 11
while x >= 10:
```

   A. increment `x`
   B. decrement `x`

7. You see some code that includes the line `print x()` - based on what you know about Python, `x` must be a _____. (1)

   A. variable
   B. function

8. Printing a function call will print _____ if the function has no return statement. (1)

   A. a blank line
   B. `None`

True or False: Evaluating boolean expressions

9. `"10" == 10` (1)

   A. True

   B. False

10. `15 % 4 == 15 / 4` (1)

    A. True

    B. False

11. `not (True and not False)` (1)

    A. True

    B. False

12. `not ( (5.1 + 3) > (24 / 3) )` (1)

    A. True

    B. False

Multiple Choice: Reading code

13. What is the *value* in `x` after the following line of code is executed? (2)

```
x = "this is - well, was - a string"[7]
```

    A. This code causes an error; the `-` operator cannot be used with strings.

    B. `" "`

    C. `"-"`

    D. `"s"`

14. What is the *data type* of `x` after the following line of code is executed, given that the user enters `2.8` at the prompt? (2)

```
x = raw_input("Enter your GPA:")
```

    A. This code causes a ValueError and crashes before `x` can be given a value.

    B. `float`

    C. `int` (integer)

    D. `str` (string)

15. What is the *output* produced after the following code is executed? **Be careful!** (2)

```
income = 15000

if income > 9275:
   print "15%",
if income > 37650:
   print "25%",
else:
   print "10%",
```

A. `10%`
B. `15%`
C. `15% 10%`
D. `25%`

16. Which of the following is a correct call to the function `percent_of_income`, defined here? (2)

```
def percent_of_income(a, b):
   """ Calculates the percent of income paid as tax """
   return float(a) / b * 100
```

A. `percent_of_income`
B. `percent_of_income()`
C. `percent_of_income(5, 10)`
D. `percent_of_income(a, b)`

17. What is the *value* in `x` after the following line of code is executed? (2)

```
x = (11 % 33)
```

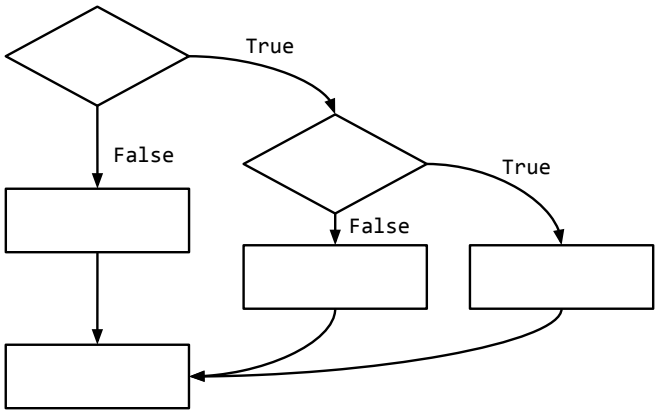
A. `0`
B. `11`
C. `3`
D. `1`

18. What is the *data type* of `x` after the following line of code is executed? Assume the `random` module has been properly imported. (2)

```
x = random.randint(1,10) > 5
```

A. `bool` (boolean)
B. `float`
C. `int` (integer)
D. `str` (string)

19. Which of the following best describes the control structure pictured in this flow chart? (2)



A. if, elif

B. if, elif, else

C. if, else

D. if with a nested if/else, else

20. What is the value in `x` after the following code executes? (2)

```
def fcn():
   print "result:",
   return 1

x = fcn()
```

A. `("result", 1)`

B. `"result"`

C. `1`

D. `None`, the function does not return a value.

21. What is the *error* produced when the following code is executed, given that the user enters `"17"` at the prompt? (2)

```
x = 15 + input("What's your favorite number?")
```

A. `TypeError`, unsupported operand type(s) for `+`.

B. `NameError`, `x` is not defined.

C. `SyntaxError`, the prompt string incorrectly ends after `"What"`.

D. This code does not cause an error.

Fill-in-the-blank: Writing code

For each of the following questions, fill in the value, operator, or statement needed to produce the indicated output (check the comments if you need a hint). Pay attention to data types!

22. Modify the variable `num` *on the correct line* so that this loop produces the output: (3)

```
2 4 6
```

Note: one line will remain blank!

```
num = 2
while num < 7:
      _____________________
      print num,
      _____________________
```

23. Complete the following condition so that the output will only display if the user's input is NOT an integer. (3)

```
user_num = input("Enter an integer:")

if _____________________________________:
      print "That's not an integer."
```

24. Complete the following line of code so that the output is `555`. (3)

```
print _____________ math.sqrt(25) _____________
```

25. Add a call to the following function so that it prints the word `correct`. (3)

```
def q_25(a, b):
      if a > 25 and b[0] == "X":
            print "correct"

_____________________________________________
```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Please leave it attached to your exam.

