Name : _____

Section TA: _____

- INTEGRITY: By taking this exam, you pledge that this is your work and you have neither given nor received inappropriate help during the taking of this exam in compliance with the Academic Honor Code of Georgia Tech. Do NOT sign nor take this exam if you do not agree with the honor code.

- DEVICES: If your cell phone, pager, PDA, beeper, iPod, or similar item goes off during the exam, you will lose 10 points on this exam. Turn all such devices off and put them away now. You cannot have them on your desk.

- ACADEMIC MISCONDUCT: Academic misconduct will not be tolerated. You are to uphold the honor and integrity bestowed upon you by the Georgia Institute of Technology.

  - Keep your eyes on your own paper.
  - Do your best to prevent anyone else from seeing your work.
  - Do NOT communicate with anyone other than a proctor for ANY reason in ANY language in ANY manner.
  - Do NOT share ANYTHING during the exam. (This includes no sharing of pencils, paper, erasers).
  - Follow directions given by the proctor(s).
  - Stop all writing when told to stop. Failure to stop writing on this exam when told to do so is academic misconduct.
  - Do not use notes, books, calculators, etc during the exam.

- TIME: Don't get bogged down by any one question. If you get stuck, move on to the next problem and come back once you have completed all of the other problems. This exam has 5 questions on 8 pages including the title page. Please check to make sure all pages are included. You will have 50 minutes to complete this exam.

I commit to uphold the ideals of honor and integrity by refusing to betray the trust bestowed upon me as a member of the Georgia Tech community. I have also read and understand the requirements outlined above.

Signature: _____

Question	Points	Score
1. Vocabulary	9	
2. Multiple Choice	9	
3. Get Users	12	
4. Write XML	8	
5. GUI coding	5	
Total:	43	

1. *(9 points)*

   For each of the following vocabulary terms, write a concise 1-2 sentence definition. Be brief, and to the point.

   (a) [3 pts] aliases

   > **Solution:** Two variables that point to the same data.

   (b) [3 pts] keyword

   > **Solution:** A reserved word that is used by the compiler to parse program; you cannot use keywords (such as if, def, and while) as variable names.

   (c) [3 pts] semantic error

   > **Solution:** An error (in code) that leads to unexpected behavior. The program functions correctly (does what the code says) but the code does not actually perform the action that the programmer intended.

2. *(9 points)*

   For each of the following multiple choice questions, indicate the most correct answer!
   Indicate your selected answer by circling it.

   (a) [1 pt] The ORDER BY command in SQL orders data ascending (ASC) if no order is specified.

   A. True   B. False   C. Maybe   D. I don't know

   (b) [1 pt] All of the following are valid SQL keywords/functions except:

   A. UPDATE   B. INSERT   C. COUNT   **D. MEAN**   E. SUM

   (c) [1 pt] What will the '_' wildcard character in SQL match?

   A. Exactly one character
   B. One or more characters
   C. Any number of characters (including zero)
   D. '_' is not a proper SQL wildcard

(d) [1 pt] Assume the variable, curs, is assigned to a cursor of a database that has successfully been connected to. The variable, sql, is a string assigned to a correct select statement that selected one column. What form will the variable, result, be in after the following code is ran?

```
curs.execute(sql)
result = curs.fetchone()
```

       A. [(data1,)]

       B. ((data1,))

       C. (data1,)

       D. Either A or B

(e) [1 pt] An XML element must have either text, attribute(s), or both.

    A. True   **B. False**

(f) [1 pt] Which of the following is True?

       A. Every element in an XML tree has an attribute.

       B. Every element in an XML tree has text.

       C. Every XML tree has a root with a tag name of "root"

       D. Every parent element in an XML tree has at least 2 children elements.

       E. None of the above

(g) [1 pt] Which of the following is True?

       A. Python can only parse XML data from a website

       B. Python can only parse XML data from a file stored on your computer

       C. Python can parse XML data from a website and/or a file stored on your computer

       D. None of the above

(h) [1 pt] Which of the following statements is false regarding XML?

       A. Attribute names can be repeated within an element.

       B. Attribute values have to be in quotes.

       C. Empty elements can be self closing.

       D. An XML document can only have one root element.

(i) [1 pt] What is the type of the variable "var" after the following line of code is executed?

```
var=Label(win, text="Hello World.").pack()
```

       A. 'tkinter.Label'

       B. <class 'tkinter'>

       C. <class 'tkinter.Label'>

       D. <class 'NoneType'>

       E. None of the above.

3. *(12 points)*

   A table has been created for you with the following command:

   ```
   CREATE TABLE USER (
   USERNAME VARCHAR(25) NOT NULL,
   PASSWORD VARCHAR(25) NOT NULL,
   PRIMARY KEY (USERNAME) );
   ```

   Write a function named **getUsers** that opens a connection to the academic-mysql.cc.gatech.edu database using the "cs2316db" database and the "cs2316" username with "SECRET" as the password. Your function should download all of the usernames and passwords from the USER table and place them into a dictionary. The username should be the key, and the password should be the value. Return this dictionary. Be sure to close your cursor and database objects when you are done with them!

Solution:

```python
import pymysql

def getUsers():
    db = pymysql.connect(host = "academic-mysql.cc.gatech.edu", db = "cs2316db",
      user = "cs2316", passwd = "SECRET")
    cur = db.cursor()
    aDict = {}
    cur.execute("SELECT * from USER")   #"select USERNAME, PASSWORD from USER"
    for info in cur:
       aDict[ info[0] ] = info[1]
    cur.close()
    db.close()
    return aDict
```

Grading:
```
 1 pt  - Correct pymysql import AND function header definition
 1 pt  - Correct pymysql.connect call
 1 pt  - Correct parameters to connect call.
 1 pt  - Created Cursor correctly.
 1 pt  - Correct SQL statement
 1 pt  - Correctly executed SQL statement
 1 pt  - iterates through results correctly.
 1 pt  - Places usernames in dictionary as key
```

```
1 pt  - Places passwords in dictionary as value
1 pt  - Correctly closes cursor (after getting data out!)
1 pt  - Correctly closes DB (after using the cursor!)
1 pt  - Returns the dictionary.
```

4. *(8 points)*

   Review the following python code:

```
import xml.etree.ElementTree as xmlTree

root = xmlTree.Element("Ice_Cream")
chocolate = xmlTree.SubElement(root,"Chocolate", color="Brown")
strawberry = xmlTree.SubElement(root,"Strawberry", color="Pink")
vanila = xmlTree.Element("Vanila")
coffee = xmlTree.Element("Coffee")
favorite = vanila
mint = xmlTree.SubElement(root,"Mint",color="Mint")
vanila.set('color','cream')
root.append(favorite)
favorite = xmlTree.Element("Favorites")
favorite.text="These are my favorites!"
favorite.append(root)
strawberry.text="This is my favorite!"
favorite.text="I like all of them!"
xmlTree = xmlTree.ElementTree(favorite)
xmlTree.write("Ice Cream.xml","UTF-8")
```

   Write the text from the XML file that the code above creates:

Solution:

```
<?xml version='1.0' encoding='UTF-8'?>
<Favorites>I like all of them!
  <Ice_Cream>
    <Chocolate color="Brown" />
    <Strawberry color="Pink">This is my favorite!</Strawberry>
    <Mint color="Mint" />
    <Vanila color="cream" />
  </Ice_Cream>
</Favorites>
```
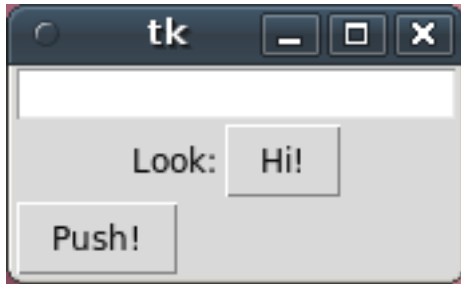
```
Grading:
1pt for some type of xml label with version & encoding as the top line.
(if they don't get the syntax exactly right that's ok, as long as
 they remembered that the module writes something at the top)
```

```
1pt for the <Favorites> root containing everything.
1pt for the "I like all of them!" text.
1pt for Ice_Cream containing the 4 ice creams.
1pt for getting the 4 ice creams (chocolate/strawberry/mint/vanilla) in the
correct order.
1pt if Chocolate, Mint and Vanilla are self closing tags.
1pt for getting the "This is my favorite!" text on Strawberry
1pt for getting the color="brown" and color="cream" attributes correct.
```

5. *(5 points)*
   Examine the following GUI:

   Write python/tkinter code that would produce the GUI pictured.

Solution:

```
from tkinter import *

win = Tk()
f = Frame(win)
f.pack()
f2 = Frame(win)
f2.pack()

Button(win, text="Push!").pack(side=LEFT)
Button(f2, text="Hi!").pack(side=RIGHT)
Label(f2, text="Look:").pack(side=RIGHT)
Entry(f, text="Not here!").pack()  #text config var has no effect in an entry!

win.mainloop()

Grading:
+1  creates window
+1 Entry at the top
+1 Look to the left of "Hi!"
+1 Look and Hi in the middle.
+1 Push button at the bottom left.
```