

**Last Name:**\_\_\_\_\_

**First Name:**\_\_\_\_\_

- **CMPUT 174 (Section A5) Midterm** (50 minutes)
  - October 24, 2012.
  - Instructor: G. Kondrak
  - Do not open this exam until you are instructed to do so. Read the instructions.
  - Fill in your name above, and your name & ID on the last page. Print clearly.
  - There are 6 questions (38 marks in total).
  - Use space below the questions to write your answers.
  - Add comments as appropriate to help clarify the intent of your code.
  - Closed book. No electronics allowed.
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1. (6 **marks**) Write a **recursive** function *highestLetter* that returns the highest letter (in alphabetical order) in a string *p*. For example, *highestLetter("banana")* should return 'n'. You must not use any loops. The only built-in function that you may use is *len*.

```
def highestLetter(p):
```

2. (6 **marks**) Write a function *removeMatches* that takes a word and a string of forbidden letters, and returns a string that is the original word with all forbidden letters removed. For example, *removeMatches("abracadabra", "ace")* should return the string "brdbr". Do not use the index operator []. *Hint: employ the accumulator pattern.*

```
def removeMatches(word, forbidden):
```

3. (6 marks) Consider the following Python code. Line numbers are shown on the left.

```
1  def pow(b, p):
2      if p == 0:
3          return 1
4      y = pow(b, p-1)
5      y = b * y
6      return y
7
8  def square(x):
9      a = pow(x, 2)
10     return a
11
12  n = 2
13  result = square(n)
14  print(result)
```

Write the sequence of the line numbers in the order in which they are processed in Python.

ANSWER:

4. (8 marks) Recall that in Assignment 2 you wrote code to compute simple statistics. Below is an incorrect program submitted as the solution to that question by Joe Careless. Mark all errors in the program, and for each error write the correct code on the right side in the same line. *Hint: there are no less than 8 errors in the program.*

```
numCases = int(input())          #
case = 1                          #
for case in range(numCases+1):    #
    numStudents = int(input())    #
    student = 0                   #
    while student <= numStudents: #
        maxScore = 0             #
        name = int(input())       #
        score = int(input())      #
        if score > maxScore:      #
            maxScore = score      #
            maxName = name        #
        sum = sum + score         #
        student = student + 1     #
    average = sum // numStudents  #
    print("Case %d" %case)        #
    print("%.2f" %average)        #
    print("%.2f %s" %maxScore %maxName) #
```

5. (4 **marks**) What is the output of the following program?

```
for i in range(10):
    j = i // 2
    while j > 0:
        print(j, end=" ")
        j = j - 2
```

OUTPUT:

6. (8 **marks**) Short answers.

(a) What is a *keyword* in Python? Give an example.

(b) Translate the following *for* loop into a *while* loop that produces the same output:

```
for i in range(10):
    print(i)
```

(c) What single statement can be executed in the body of a loop to cause it to terminate?

(d) Write a single statement that uses the slicing operator to extract a substring composed of the third and the fourth letters from a six-letter word *w*.

(e) Write a single Boolean expression that is *True* if *x* is divisible by 3, and *False* otherwise.

(f) What is the correct way to reference the value  $\pi$  within the *math* module?

(g) What is the result of executing the following statement?

```
print("banana".find("a"))
```

(h) What is the result of executing the following statement?

```
print("9"+"8" * 2)
```

Last Name:\_\_\_\_\_ First Name:\_\_\_\_\_ ID:\_\_\_\_\_

Q1		6
Q2		6
Q3		6
Q4		8
Q5		4
Q6		8
Total		38