EXAMINATION INSTRUCTIONS

This examination has 9 pages. If your copy is missing a page, let one of the course staff know. Before starting this test, students should put his or her SUNY/UB card out on the desk so that course staff can check attendance.

This examination has 8 questions. Answer all questions.

You have 60 minutes to complete this examination. Use your time accordingly.

READ AND OBSERVE THE FOLLOWING RULES:

► Names are pre-printed on the exam booklets. Ensure that you have YOUR exam.
► Sign, using your usual signature, in the space provided on the back cover.
► All of your writing must be handed in. This booklet must not be torn or mutilated in any way and cannot leave the examination room.
► For your answers to earn credit, you must show all of your work in arriving at an answer. Partial credit will be earned as appropriate.
► Students can talk to proctors only in cases of supposed errors or question ambiguity. Proctors will not answer any other questions during this exam.
► Candidates guilty of any dishonest practices will be immediately dismissed from the examination and shall be liable for disciplinary action. Examples of dishonest practices include:
  ♦ Having books, papers, calculators, computers, cellphones, or other memory aid or electronic device out without explicit authorization by the proctors.
  ♦ Speaking or communicating with other students.
  ♦ Purposefully exposing their work where other students could view it. Claims that the exposure was accidental or due to forgetfulness will not be accepted.

------------------------------------------------- DO NOT WRITE BELOW THIS LINE! -------------------------------------------------
Module 1 - Question 1 [20 points, 4 points each]
The code given below is syntactically correct.

Circle, and identify by number, **EXACTLY 1** example of each of the following items in the code below. If the code below does not contain an example of an item, write “*no example*” next to that item in the list. To show you how I want the question answered, the first one is done for you.

0. numeric literal
1. keyword
2. variable
3. assignment statement
4. function argument
5. str literal  *no example!*

```python
def overspent ( budget ) :
    over = {}
    months = list( budget.keys() )
    months.pop(0)
    for key in months :
        data = budget[key]
        diff = int(data[ 0 ]) - int(data[ 1 ])
        if (diff < 0) :
            over[key] = diff
    return over
```
Module 1 - Question 2 [20 points total, 10 each part]

[ ] 10 points: perfect
[ ] 3 points: clearly wrong, some correct elements
[ ] 7 points: essentially correct but with small mistakes
[ ] 0 points: for anything else

Study the following code, then answer the question which follows.

```javascript
function module1question2(x) {
    result = ''
    if (x < 55) {
        return "Zoo";
    } else if (x < 70) {
        result = "Walk";
        x = x - 55;
    } else if (x < 85) {
        result = "Talk";
        x = x - 70;
    } else {
        result = "Hawk";
        x = x - 85;
    }
    if (x < 5) {
        result = result + "??";
    } else if (x < 10) {
        result = result + "!!";
    } else if (x < 15) {
        result = result + "**";
    }
    return result;
}
```

[10 points] What does the following statement print?
```javascript
console.log("Answer is " + module1question2(71));
```

Write your answer below:

**Answer is Talk??**

[10 points] Give a value of x which `module1question2(x)` returns "Hawk**". Write your answer below:

95, 96, 97, 98, or 99

(Any one of these is a correct answer. We only listed all of them here to avoid any confusion about what the range of legal answers are)
Module 1 - Question 3 [20 points total]

Read this description of how to convert a temperature from Fahrenheit to Kelvin:

*Fahrenheit and Kelvin are two common temperature scales. The Fahrenheit scale is used in the United States, while Kelvin is an absolute temperature scale, used worldwide for scientific calculations. While you might think this conversion wouldn’t occur much, it turns out there is a lot of scientific and engineering equipment that uses the Fahrenheit scale! Fortunately, it is easy to convert Fahrenheit to Kelvin.*

Fahrenheit to Kelvin Method #1

1. Subtract 32 from the Fahrenheit temperature.
2. Multiply this number by 5.
3. Divide this number by 9.
4. Add 273.15 to this number.

*The answer will be the temperature in Kelvin.*

Define a Python function named `f2k` which converts a temperature expressed in Fahrenheit to the equivalent temperature expressed in Kelvin, using the above method.

Your function should take a temperature in Fahrenheit as its only input and return the corresponding temperature in Kelvin.

Write your answer below:

(Many solutions are possible, this is just one example of code you could write. The important thing is whatever code you write, it correctly solves the problem.)

```python
def f2k(temp):
    retVal = temp - 32
    retVal = retVal * 5
    retVal = retVal / 9
    retVal = retVal + 273.15
    return retVal
```
Module 1 - Question 4  [20 points total]

Consider a function named \texttt{postage} which will be called with one argument (you can assume that it will be called only with an integer value representing the weight of a package, in grams). This function will compute and return an integer value representing the postage needed to mail a letter based upon its weight, according to this table:

<table>
<thead>
<tr>
<th>Weight (in grams)</th>
<th>Postage (in cents)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to and including 20 grams</td>
<td>10</td>
</tr>
<tr>
<td>More than 20 grams, but less than or equal to 40 grams</td>
<td>$10 + 2$ cents per gram of weight over 20 grams</td>
</tr>
<tr>
<td>More than 40 grams</td>
<td>$50 + 3$ cents per gram of weight over 40 grams</td>
</tr>
</tbody>
</table>

Describe briefly what a test case is: [ 8 points total ]

[ ] 8 points: perfect  
[ ] 5 points: essentially correct but with small mistakes  
[ ] 3 points: clearly wrong, some correct elements  
[ ] 0 points: for anything else

A test case is a possible input together with the corresponding correct output.

Give two distinct test cases: [ 12 points total, 6 points each ]

[ ] 6 points: perfect  
[ ] 4 points: essentially correct but with small mistakes  
[ ] 2 points: clearly wrong, some correct elements  
[ ] 0 points: for anything else

Test case #1:

Input: 21, Output: 12  
This is one way to write a test case.

Test case #2:

\texttt{postage(41)} \rightarrow 53  
This is another. Either/both are good.
Module 2 - Question 1 [20 points, 4 points each]
The code given below is correct: it compiles without errors. I have added some extra spacing to make this question easier to answer.

Circle, and identify by number, one and only one example of each of the following items in the code below. If you believe no example exists, write “no example” next to that item in the list. To show you how I want the question answered, the first one is done for you.

0. numeric literal
1. conditional statement (entire statement)
2. looping statement (entire statement)
3. empty dictionary literal
4. dictionary lookup
5. variable whose value is a List

```python
def overspent(budget):
    over = {}
    months = list(budget.keys())
    months.pop(0)
    for key in months:
        data = budget[key]
        diff = int(data[0]) - int(data[1])
        if (diff < 0):
            over[key] = diff
    return over
```

Sample
Module 2 - Question 2 [20 points total]

Consider a Python function named `sumOfNumbersInList` which has one parameter. The parameter is a List of numbers. The function calculates and returns the sum of all the numbers in the List.

Part 1 [1 point]
What value does `sumOfNumbersInList([17, 3, -5])` return?

15

Part 2 [1 point]
What value does `sumOfNumbersInList([0])` return?

0

Part 3 [1 point]
What value does `sumOfNumbersInList([])` return?

0

Part 4 [17 points]

[ ] 17 points: perfect
[ ] 6 points: clearly wrong, some correct elements
[ ] 12 points: essentially correct but with small mistakes
[ ] 0 points: for anything else

Define, in Python, the function `sumOfNumbersInList`:

```python
def sumOfNumbersInList(lst) :
    retVal = 0
    for num in lst :
        retVal = retVal + num
    return retVal
```

(Many solutions are possible, this is just one example of code you could write. The important thing is whatever code you write, it correctly solves the problem.)
Module 2 - Question 3  [20 points total]

[ ] 20 points: perfect  [ ] 7 points: clearly wrong, some correct elements
[ ] 14 points: essentially correct but with small mistakes  [ ] 0 points: for anything else

Define a JavaScript function named `printArray` with two parameter. Assume the function will be called with an array of `Strings` and an integer. Define the function so it prints (using `console.log`) each `String` in the array whose length is greater than or equal to the integer.

For example,

```javascript
printArray(["sue", "amy", "bob"], 6)
```

must print nothing, whereas

```javascript
printArray(["foo", "fluffy", "pi", "cake", "rho"], 4)
```

must print the following:

```
fluffy
cake
```

Write your answer below:

```javascript
function printArray(ra, minLen) {  
    for (var str of ra) {  
        if (str.length >= minLen) {  
            console.log(str);  
        }
    }
}
```

(Many solutions are possible; this is just one example of code you could write. The important thing is whatever code you write, it correctly solves the problem.)
Module 2 - Question 4 [20 points total]

Study the following code:

```python
import csv

def secrets(filename):
    with open(filename, "r", newline='') as f:
        reader = csv.reader(f)
        for line in reader:
            print(line[1])
        print("Done")

secrets("f.csv")
```

Give possible contents for the file `f.csv` which would cause the above to print:

2
5
I love CSE
Done

Give your answer below:

(This is just one possible answer, all that matters is that the "file" has 3 rows and the second columns of those rows are (in order) 2, 5, and I love CSE).

1, 2, 5
99, 5, 6
10, I love CSE, 12