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.
  ♦ Purposely 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! ---------------------------

<table>
<thead>
<tr>
<th>MODULE 1</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>Subtotal</th>
</tr>
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<td>/20</td>
<td>/20</td>
<td>/80</td>
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<tr>
<td>MODULE 2</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
<td>Q4</td>
<td>Subtotal</td>
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<td></td>
<td>/20</td>
<td>/20</td>
<td>/20</td>
<td>/20</td>
<td>/80</td>
</tr>
</tbody>
</table>

Total /160
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. parameter listing
2. variable whose value is a *str*
3. *str* literal *no example*
4. function call
5. boolean expression

```
def countLengths(lst):
    retVal = {}
    for val in lst:
        strLen = len(val)
        if strLen in retVal:
            retVal[strLen] = retVal[strLen] + 1
        else:
            retVal[strLen] = 1
    return retVal
```
Module 1 - Question 2  [20 points total, 10 each part]

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

```python
def module1question2(param):
    retVal = 'Char'
    if param > 128:
        return "Extend"
    if param < 31:
        retVal = retVal + "ctrl ">
    elif param > 122:
        retVal = retVal + "punct ">
    if param > 33 or param > 64:
        retVal = retVal + 'p'
    elif param < 10:
        retVal = retVal + str(param)
    else:
        retVal = retVal + '*'
    return retVal
```

[10 points] What does the following statement print?
```python
print(module1question2(19))
```
Write your answer below:

`Charctrl *`

[10 points] Write the statement that calls `module1question2` and results in the function returning "Char*". Write your answer below:
```python
module1question2(x), where x is 31, 32, or 33
```
Module 1 - Question 3  [20 points total]

<table>
<thead>
<tr>
<th></th>
<th>20 points: perfect</th>
<th></th>
<th>7 points: clearly wrong, some correct elements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>14 points: essentially correct but with small mistakes</td>
<td></td>
<td>0 points: for anything else</td>
</tr>
</tbody>
</table>

Read this description of how to calculate what the end temperature of 1 milliliter of water will be when it starts at 68 degrees and then has energy transferred in to it:

In order to calculate the end temperature, we must first calculate how much the water’s temperature will change. We do this by calculating the magnitude of the change in Celsius, covert the Celsius result to Fahrenheit, and then add that result to the starting temperature. To get the temperature change in Celsius, we divide the amount of energy transferred in by 4.2. We can then convert that to degrees Fahrenheit by multiply that result by 1.8. Finally, we add 68 to the result to get end temperature of the 1 milliliter of water.

Define a Python function named `finalTemp` which can calculates the end water temperature using the process explained above. Your function should take the amount of energy transferred in as its only input and return the final temperature (in Fahrenheit) of the 1 milliliter of water.

Write your answer below:

```python
def finalTemp(energy) :
    deltaCelsius = energy / 4.2
    deltaFahrenheit = deltaCelsius * 1.8
    finalTemp = deltaFahrenheit + 68
    return finalTemp
```
Module 1 - Question 4  [20 points total]

Consider a function named `smarts` which will be called with one argument (you can assume that it will be called only with an int value representing a person’s IQ score). This function will compute and return a `str` representing the IQ classification of that individual, according to this table:

<table>
<thead>
<tr>
<th>Age</th>
<th>IQ Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;= 121</td>
<td>Superior</td>
</tr>
<tr>
<td>&gt;= 111 and &lt; 121</td>
<td>High Average</td>
</tr>
<tr>
<td>&gt;= 89 and &lt; 111</td>
<td>Average</td>
</tr>
<tr>
<td>&gt;= 80 and &lt; 89</td>
<td>Low Average</td>
</tr>
<tr>
<td>&gt;= 69 and &lt; 80</td>
<td>Borderline</td>
</tr>
<tr>
<td>&lt; 68</td>
<td>Professor</td>
</tr>
</tbody>
</table>

Describe briefly what a test case is: [ 8 points total ]
[ ] 8 points: perfect  [ ] 3 points: clearly wrong, some correct elements
[ ] 5 points: essentially correct but with small mistakes [ ] 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  [ ] 2 points: clearly wrong, some correct elements
[ ] 4 points: essentially correct but with small mistakes [ ] 0 points: for anything else

Test case #1:

`smarts(67) \rightarrow \text{“Professor”}`

Test case #2:

`classLevel(140) \rightarrow \text{“Superior”}. (\text{‘Winikus’ would also be acceptable ;})`
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. loop header
5. use of a list index no example

```python
def countLengths(lst):
    retVal = {} # 3
    for val in lst: # 4
        strLen = len(val) # 1
        if strLen in retVal: # 0
            retVal[strLen] = retVal[strLen] + 1 # 1
        else:
            retVal[strLen] = 1
    return retVal
```

return retVal
Module 2 - Question 2  [20 points total]

Consider a JavaScript function named \texttt{countLarger} which has two parameters. The first parameter is an array of \texttt{Strings} and the second parameter is a \texttt{Number}. The function calculates the number of array entries whose lengths are at least as large as the second parameter. If the array is empty, the function can return 0.

**Part 1** [1 point]

What value does \texttt{countLarger( [ ], 0 )} return?

0

**Part 2** [1 point]

What value does \texttt{countLarger( [ "Short", "Long", "Not Long" ], 5 )} return?

2 ("Short" has length of 5 and "Not Long" has a length of 8)

**Part 3** [1 point]

What value does \texttt{countLarger( [ "Pat", "Fran", "Joey" ], 2 )} return?

3

**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 JavaScript, the function \texttt{countLarger}:

```javascript
function countLarger(arr, num) {
    var retVal = 0;
    for (var ent of arr) {
        if (ent.length >= num) {
            retVal = retVal + 1
        }
    }
    return retVal;
}
```
Module 2 - Question 3  [20 points total]

Define a Python function named `strPrefix` with two parameters. The first parameter for this function is a List of `str` and the second parameter is a `str`. This function will return a new List containing the same number of entries as the first parameter, BUT each entry in the returned List contains the second parameter `str` added at the start of the entry at the same index in the original List. The original List must not be modified.

For example,

```python
strPrefix(['sign', 'neg', 'vamp'], 're')
```

would return a new List with: `['resign', 'reneg', 'revamp']`, whereas

```python
strPrefix(['Hz', 'ellow', '.Poirot'], 'M')
```

must return a new List containing: `['MHz', 'Mellow', 'M.Poirot']`

Write your answer below:

```python
def strPrefix(lst, prefix) :
    retVal = []
    for ent in lst :
        retVal.append(prefix + ent)
    return retVal
```
Module 2 - Question 4  [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

Study the following code:

```python
import csv

def last_quest(filename):
    with open(filename, "r") as f:
        reader = csv.reader(f)
        for line in reader:
            if line[0] == line[1]:
                print(line[2])
        print("Done")

last_quest("almost.csv")
```

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

```
I
am
now
Done
```

Give your answer below:

```
skip, or don’t, it matters not to me
1, 1, I, more allowed
2, 2, am
Consistent, Consistent, now
```