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|---|---|
| **Name:**<br>*(as it would appear on official course roster)* | |
| **Umail address:** **@umail.ucsb.edu** | **section** |
| **Optional: name you wish to be called if different from name above.** | |
| **Optional: name of "homework buddy" (leaving this blank signifies "I worked alone"** | |

# h04: Modules, Conditional, Loops, and Related Topics

Assigned: Mon. 1/28/19, 9:30 AM
Due: Mon. 2/4/19, 9:30 AM in class
Points: 100

- You may collaborate on this homework with AT MOST one person, an optional "homework buddy". MAY ONLY BE TURNED IN THE LECTURE LISTED ABOVE AS THE DUE DATE. There is NO MAKEUP for missed assignments; in place of that, we drop the single lowest score (if you a zero, that is the lowest score.)
- When submitting this homework:
  - **DO NOT USE STAPLES**
  - WRITE YOUR **NAME ON <u>EACH</u> PAGE** IN THE SPACE PROVIDED
  - USE **DARK INK PENS** – PLEASE **DO NOT USE PENCIL**
  - PRINT ON **BOTH SIDES** OF THE PAGE!

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READING ASSIGNMENT: Read Chapter 5 in Perkovic and review ALL class notes/slides. Then complete these problems.

1. (4 pts) Name 1 thing that modules (or libraries) are used for in computer programs.

2. ( 6 pts) For the Python code in the left box, write the output in the right box:

| | |
|---|---|
| `colors = ["red","green","blue"]`<br>`for c in colors:`<br>`  print(c)` | |
| `fruits = ["apple","banana","pear","grape"]`<br>`for i in range(4):`<br>`  print(i,fruits[i],sep=",")` | |

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3. (40 pts) p. 129 in the textbook shows a function definition for a multi-way if/else that prints a message depending on the temperature.

   Rewrite this function so that instead of printing a message, it returns a letter grade (e.g. `return 'A'` instead of `print('It is hot')` based on the integer parameter. If the grade is 90 or above, return an 'A'. If it is 60 or higher, but less than 90, return a 'C', and if it is less than 60, return an 'F'. (In real life, there would be Bs and Ds, but this is just an exercise.)

   NOTE: Be careful about the fact that in an `if`/`elif`/`else`, some of the relationships are implicit. You cannot get to the `elif` unless the condition on the first `if` is false. So you should not check for that a second time. (To be more clear: the `elif` on p. 129 says: `elif t > 32:` rather than `if t <= 86 and t > 32`. The `t<=86` part is unnecessary, because we would never even get to the `elif` unless `t<=86` were true. Make sure you keep this in mind as you write your code for this problem. Points may be deducted if you do redundant checks, even if the code "works".)

| Name: |
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4. (15 pts) Write a function definition, **`CheckIt(x, a, b)`**, that takes in 3 integers, **x**, **a**, and **b**, checks to see if **x** lies between the values of **a** and **b** (inclusive of **a** and **b**), and returns the Boolean value **`True`** if that is true, otherwise it returns **`False`**.

```
def CheckIt(x, a, b):
```

5. (10 pts) Consider this Python function:

```
def Loopy(m, n, p):
    b = 0
    for a in range(m, n, p):
        b += a
    print(b)
```

a) (4 pts) What is variable **b** called here? *Hint*: Read p. 134-136 (this is important, so read it!)

For the next 3 questions, what would happen if you called the function in these different ways? *Hint*: You can try these on IDLE, but be prepared to answer *how* this happens in an exam!!

b) (2 pts) **`Loopy(2, 5, 1)`**

c) (2 pts) **`Loopy(-5, 3, 3)`**

d) (2 pts) **`Loopy(25, 17, -2)`**

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6. (25 pts) Write a Python function, **`MyFunction()`**, that asks the user for a positive, non-zero, integer input and prints a countdown, in ones, from that integer to zero. The function MUST CHECK to see if the user DID put in a positive, non-zero, integer. You MUST use a **`while`** loop in this program to get *any* credit. Here's an example run. The bolded parts are what the user would enter:

```
>>>MyFunction()
Enter a positive, non-zero, number: -3
That is not a valid entry. Goodbye!

>>>MyFunction()
Enter a positive, non-zero, number: 4
4
3
2
1
0
```