M03-HW-KEY

August 31, 2022

1 Metadata

```
Course:   DS 5100
Term:     Fall 2022 Online
Module:   M03 Homework
Author:   R.C. Alvarado
Date:     32 August 2022
```

2 Student Info

- Name:
- Net ID:
- URL of this file in GitHub:

3 Instructions

In your **private course repo on Rivanna**, write a Jupyter notebook running Python that performs the numbered tasks below.

For each task, create a code cell to perform the task.

Save your notebook in the `M03` directory as `hw03.ipynb`.

Add and commit these files to your repo.

Then push your commits to your repo on GitHib.

Be sure to fill out the **Student Info** block above.

To submit your homework, save the notebook as a PDF and upload it to GradeScope, following the instructions.

4 Task 1

(6 points)

Using the **for** loop and **if** statement control structures, write a script that generates the integers from 1 to 100 and does the following things:

- If 3 is a factor of the number, print `Wahoo`.
- If 5 is a factor of the number, print `wah!`.

- If the number meets none of the above conditions, print nothing, not even a line break.
- If the number meets both of the conditions, print the strings on the same line with no space between them.
- Make sure that the line printed for each iteration in which a condition is met ends with a line break.
- When the loop is finished, print the number of times either conidtion was met, i.e. the number of lines that were printed.

Hint: You may not need to use **elif** and **else** to accomplish these tasks.

[45]:
```
n = 0
for i in range(1, 101):
    a = i % 3 == 0
    b = i % 5 == 0
    if a:
        print("Wahoo", end='')
    if b:
        print("wah!", end='')
    if a or b:
        n += 1
        print()
print(n)
```

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Wahoo
wah!
Wahoo
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47
```

5 Task 2

(3 points)

Rewrite the `for` loop as a `while` loop.

This time, only print lines where both conditions are met.

Include a final line which prints the number of times both conditions are met.

[92]:
```
i = n = 0
while i < 100:
    i += 1
    a = i % 3 == 0
    b = i % 5 == 0
    if a and b:
        print("Wahoowah!")
        n += 1
print(n)
```

```
Wahoowah!
Wahoowah!
Wahoowah!
Wahoowah!
Wahoowah!
Wahoowah!
```

6

6 Task 3

(3 points)

Write a list comprehension that iterates through the integers from 1 to 100 and returns a list containing the sum of the boolean values of the two conditions described in Task 1.

[90]:
```
x = [(i % 3 == 0) + (i % 5 == 0) for i in range(1, 101)]
```

[91]:
```
x
```

[91]:
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[0,
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[ ]: