Metadata

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Course:   DS 5100
Term:     Summer 2023
Module:   M03 Homework
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Student Info

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- URL of this file in GitHub: https://github.com/rachel-holman/DS5100-dnw9qk/blob/main/lessons/M03/hw03.ipynb

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.

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.

In [1]:
```
sum = 0
word = ""

for i in range(1, 101):
    if (i % 3 == 0):
        word += "Wahoo"
    if (i % 5 == 0):
        word += "wah!"
    if (word != ""):
        print(word)
        sum +=1
    word = ""

print(sum)
```

```
Wahoo
wah!
Wahoo
Wahoo
wah!
Wahoo
Wahoowah!
Wahoo
wah!
Wahoo
Wahoo
wah!
Wahoo
Wahoowah!
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Wahoo
Wahoowah!
Wahoo
wah!
Wahoo
Wahoo
wah!
47
```

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.

In [4]:
```
count = 1
sum = 0

while count < 101:
    if (count % 3 == 0 and count % 5 == 0):
        print("Wahoowah!")
        sum += 1
    count += 1

print(sum)
```

```
Wahoowah!
Wahoowah!
Wahoowah!
Wahoowah!
Wahoowah!
Wahoowah!
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.

In [8]:
```
div_by_3_5 = [(i % 3 == 0) + (i % 5 == 0) for i in range(1,101)]

print(div_by_3_5)
```

```
[0, 0, 1, 0, 1, 1, 0, 0, 1, 1, 0, 1, 0, 0, 2, 0, 0, 1, 0, 1, 1, 0, 0, 1, 1, 0,
1, 0, 0, 2, 0, 0, 1, 0, 1, 1, 0, 0, 1, 1, 0, 1, 0, 0, 2, 0, 0, 1, 0, 1, 1, 0,
0, 1, 1, 0, 1, 0, 0, 2, 0, 0, 1, 0, 1, 1, 0, 0, 1, 1, 0, 1, 0, 0, 2, 0, 0, 1,
0, 1, 1, 0, 0, 1, 1, 0, 1, 0, 0, 2, 0, 0, 1, 0, 1, 1, 0, 0, 1, 1]
```