UNIV199 Introduction to Programming with Python

Homework #6

Due Date: November 18, 2020, Wednesday, 23:59

Loops: Iterative sequence

For any positive starting number, by applying the below rule iteratively, you can create a sequence of numbers ***S*** that ends with 1.

$$S_{i+1} = \begin{cases} S_i/2 & if\ S_i is\ even \\ 3S_i + 1 & i\ S_i\ is\ odd \end{cases}$$

As an example, using this rule and starting with 13, we would generate the following series:

S = 13, 40, 20, 10, 5, 16, 8, 4, 2, 1

Some starting values yield longer, some yield shorter sequences.

Find the starting value less than 100,000 that yields the longest sequence ***S***. Your sequence elements can exceed 100,000; as long as the starting value is less than 100,000 that is fine.

Sample screen output ("?" marks should be replaced with values your program finds):

```
The longest sequence has ??? elements.
It starts with the number: ?????
```

Name your Python py-file as **h06*yourlastname*.py** and then upload it to Blackboard Learn at https://ku.blackboard.com. Anyone e-mailing his/her homework will lose points!

While doing all your homework assignments, remember that:

- ***You should not work together,***
- ***You should not give or take any files,***
- ***You should not give or take help other than simple verbal hints.***