While loops



Admin

- Questions?
- Project?
- And a reminder
-



Two kinds of loops



- Two kinds of loops in programming
  - We do something for each element of a collection
    - Which we use what keyword?

Two kinds of loops



- Two kinds of loops in programming
  - We do something for each element of a collection
    - Which we use what keyword?
    - for
  - We do something until the world situation meets some condition
    - Real life
      - Shovel snow till it is gone
    - Programming
      - Ask user for input till they give the right answer

While



- Keep doing it until the condition is met loop in python: While
- Syntax
  - while <condition>:
    - Do codeblock
  - Condition can be any boolean condition as with if statements

```
number_of_questions = get_number_of_students()
while number_of_questions >0:
    print("your question is ....")
    number_of_questions = number_of_questions-1
```

While : infinite loops



- Be careful of infinite loops
  - You need to update something about the condition inside of the loop or you will loop forever
  - Lets try it and see.

```
number_of_questions = get_number_of_students()
while number_of_questions >0:
    print("your question is ....")
    #oops I forgot to update number_of_questions
```

While with a ‘flag’



- A flag variable is a term for using a boolean type variable to determine if we should do something or not
- Set the flag to false till the world changes to be done the loop

```
done = False
while not done:
    answer = float(input("Enter gpa, enter number from 0.0 to 4.0:"))
    if 0.0 <=answer  <=4.0:
        done = True

#then we continue here

#note that older versions of python we would have to use and
# if 0.0 <= answer and answer <= 4.0
```

Loop forever



- If your program should do something ‘forever’ then we have a special loop
  - Where here forever means till the program ends
- Usually used in games, operating systems etc
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- while True:
  - Do stuff here

Loop Forever II



- If loop forever means till the program ends, we need to exit loop when program ends
  - Python keyword break will exit current loop (either while or for)

- while True:
  - Do stuff here
  - if end:
    - break

Class Exercise



- Stalker ‘friend’
- Or
- Insistent administrator
- Ask the user to join them again and again till they say any answer like ‘yes’ (let’s accept ‘yes’, ‘yup’, ‘yeah’ or ‘ok’)
  - Hint: string startswith() method
  - Hint use list of strings and check with if input in list
- Then celebrate
  - First in text, (then using audio – maybe if we have time)

Removing values from a list



- The list remove function does what?

Removing values from a list



- The list remove function does what?
  - Removes the *first* item that matches from the list
  - What if you want to remove them all?
  - You have to be careful with for loop (especially with range)
  - But can use while loop and remove together

- books = ["Python Crash Course", "Game Programming", "Code Complete", "Clean Code", "The Pragmatic Programmer", "Python Crash Course"]
- while "Python Crash Course" in books:
  - books.remove("Python Crash Course")

Another in class Exercise



- Lets grab the CountryPop text file from the class resources page;
  - get it an put it in your pycharm project folder
  - Data source: https://www.worldometers.info/world-population/population-by-country/
- I wrote a small program to open this file
  - Read in all the lines,
  - Create a list
  - For each line in the file create a dictionary with several keys
  - Add the dictionary to the list.
  - Just to make sure it worked, let's print each item in the list
- I did this for us for project 5 – now lets try it together.
  - Then continue with the next

One more use for while loops



- Let’s program like its 1993
  - Or deep inside of any modern program
- Let’s extend that last program to add a text based menu
- We need a while loop in that loop
  - Print the menu
  - Read input from the user
  - In an if-elif...else statement pick the right activity based on the users request and then do it
    - Find largest increase
    - Find ‘largest’ decrease
    - Find all of the countries with a young median population.
    - Other? Let’s choose as a class
    - quit

Reading



- Read Chapter 7 with these slides
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