

Session 3: Loops, Conditionals, and Sequential Thinking

Introduction to for loops

For loops allow us to repeat things

```
In [1]: # for loops  
# Add comments to document your understanding  
start_i = 1  
stop_i = 4  
step_i = 1  
for i in range(start_i, stop_i, step_i):  
    print(i)
```

```
1  
2  
3
```

```
In [ ]: # Write the code to count from 1 to 10  
# Your code should output: 1, 2, 3, ..., 10.
```

```
In [ ]: # Write the code to count from 2 to 20 by 2  
# Your code should output: 2, 4, 6, ..., 20.
```

Introduction to conditional statements

```
In [ ]: # Guess my number game  
# Add comments to document your understanding.  
  
# Note that int() converts it to an integer.  
# int(1.1) gives 1 so that spaces are removed :-).  
number = int(input(" Input your number "))  
secret_number = 5  
if (number == secret_number):  
    print("You guessed it!")  
    print("You win.")  
else:  
    print("You did not guess it correctly!")  
    print("I win!")
```

```
In [ ]: # Same game with inequalities.
# Fix the code so that the correct message is printed in all three cases.

number = int(input(" Input your number "))
secret_number = 5

if (secret_number > number):
    print("Your guess is ... 1") # FIX the message
elif (secret_number < number):
    print("Your guess is ... 2") # FIX the message
else:
    print("Your guess is ... 3") # FIX the message
```

Random numbers

```
In [7]: # Get the Random Library
# Run the code multiple times
# What do you observe?
from random import *
print(randint(1, 10)) # Pick a random number between 1 and 10.
```

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Combining loops and conditionals

While loops

While loops repeat code until a condition is met.

```
while (condition):
    execute this code
```

```
In [8]: # Computer guessing your number by trying it all out.
# Add comments to the code to remember what you noticed in the code.
secret_number = 9

computer_guess_number = 1
while (computer_guess_number != secret_number):
    print("I tried "+str(computer_guess_number))
    computer_guess_number = computer_guess_number + 1

print("I guessed it!")
print("Your number is "+str(computer_guess_number))
```

I tried 1
I tried 2
I tried 3
I tried 4
I tried 5
I tried 6
I tried 7
I tried 8
I guessed it!
Your number is 9

Guess random number game

```
In [9]: # Add comments to the code

from random import *
secret_number = randint(1, 10)

computer_guess_number = 1
while (computer_guess_number != secret_number):
    print("I tried "+str(computer_guess_number))
    computer_guess_number = computer_guess_number + 1

print("I guessed it!")
print("The random number is "+str(computer_guess_number))
```

I tried 1
I tried 2
I guessed it!
The random number is 3

Guess a random number with hints

Write a game that asks the user to guess a random number.

Then, give the user a hint if the number is high or low.

When the right number is found, print a success message.