

IHF: CODE - PYTHON WORKSHEET 2

Comparators

< less than
<= less than or equal to
> greater than
>= greater than or equal to
== equal to
!= not equal to

Conditional statements

If statements:

An if statement lets us decide what to do: if True, then do this. If False, then don't do this

Else statements:

If the first statement is False, you can use an else statement to check an alternative

Elif statements:

If you want to check more than two alternatives, you can use the elif statement.

And/or/not statements:

You can combine conditionals with **and** or **or**. When using **and**, if one of the conditions are false, the result will be **false**.

When using **or**, if one of the conditions are true, the result will be **true**.

When using **not**, if the condition satisfies the not statement, the result will be **true**. This can be useful for filtering.

Modules

A module contains reusable code. It allows you to make use of what others have done without having to reinvent it.

Importing a module = import module_name (which is the name of the module)

Math Module

import math - will import the math module
math.ceil(variable) = will round up your number to the nearest whole number
math.floor(variable) = will round your number down to the nearest whole number

Tuples

A tuple is a collection which is ordered and unchangeable. In Python tuples are written with round brackets () .

You can access tuple items by referring to the index number, inside square brackets.

Once a tuple is created, you cannot change its values. Tuples are unchangeable. You cannot add or remove items in a tuple but you can delete the entire tuple completely.

While loops

A while loop will continue to loop while a condition is True.

Infinite loops

An infinite loop is a loop that never ends; it never breaks out of the loop. The loop gets executed forever, unless the program is terminated.

Break statements

To terminate the loop you are running, you can include a break statement. It will then look at the next piece of code to execute. This can be used on both for and while loops.

Random Module

import random - this module lets you pick random numbers.

random.random - lets you pick a random number for 0 - 1.

random.choice([1,2,3,4,5]) - gives us a random choice from a specified list.

random.randint(1,1000) - gives us a random number from a range.

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CODE EXAMPLES

SECTION A & B

1. Input: x = 5 y = 6 if x < y: print("X is smaller than Y") Output: X is smaller than Y	3. Input: x = 8 y = 8 if x < y: print("X is smaller than Y") elif x > y: print("Y is smaller than X") else: print("X is equal to Y") Output: X is equal than Y	4. Input: x = 5 y = 7 z = 7 if x < y and y == z: print("X is smaller than Y but equal to Z") Output: X is smaller than Y but equal to Z if x == y or y == z: print("One condition is satisfied") Output: One condition is satisfied
2. Input: x = 9 y = 7 if x < y: print("X is smaller than Y") else: print("Y is smaller than X") Output: X is smaller than Y		

SECTION C

1. Input: for letter in "Birthday": if letter == "d": break print("Current letter:", letter) print("The end") Output: Current letter: B Current letter: i Current letter: r Current letter: t Current letter: h The end	5. Input: import random num = random.randint(1,100) print(num) Output: 76
2. Input: for years in range(1991, 2001, 3): print(years) Output: 1991 1994 1997 2000	6. import math guests = int(input("How many guests?\n")) cost_per_head = float(input("What is the cost per head? \n")) if guests > 10: cost_per_head = math.floor(cost_per_head) print(guests * cost_per_head)
3. Input: number = 1 while number < 4: print(number) number += 1	7. import random #tails = winner, heads = loser computer_choice = random.choice(["heads", "tails"]) user_choice = input("Heads or Tails?\n") if not (user_choice == "heads" or user_choice == "tails"): print("You failed to enter a correct option!") elif (computer_choice == user_choice): print("Draw") elif (computer_choice == "tails" and user_choice == "heads"): print("Computer Wins") elif (computer_choice == "heads" and user_choice == "tails"): print("User Wins")
4. Input: guess = None while guess != 4: # Continues to ask for a number until you enter 4 guess = int(input("What's your number? "))	

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QUESTIONS

SECTION A

1. Ask for the user's name, if they are called "Bob", print "Welcome Bob!"
2. Ask for the user's name, if they are not called "Alice", print "You're not Alice!"
3. Ask the user for a password, if they enter the password "qwerty123", print "You have successfully logged in". If they get it wrong, print "Password failure"
4. Ask the user to enter a number, if the number is even, print "Even", otherwise print "Odd"
5. Ask the user for 2 different numbers, if the total of the two numbers is over 21, print "Bust" otherwise print "Safe"

SECTION B

1. Ask for the user's name, if they are called "Alice" print "Hello, Alice", if they are called "Bob", print "You're not Bob! I'm Bob", else print "You must be Charlie"
2. Ask the user to enter their age
 - i. If they are younger than 11, print "You're too young to go to this school"
 - ii. If they are between 11 and 16, print "You can come to this school"
 - iii. If they are over 16, print "You're too old for school"
 - iv. If they are 0, print "You're not born yet!"
3. Ask the user to enter the name of a month. If the user enters March/April/May: print "is in Spring", otherwise print "I don't know"
 - i. Expand for the rest of the year, given that summer is June/July/August. Autumn is September/October/November. Winter is December/January/February
 - ii. Ensure that when an unknown month is given it prints "I don't know"
4. Ask the user for two different numbers, if both numbers are even, print "Even", if both numbers are odd, print "Odd", else print the product of two numbers

SECTION C

1. Print the numbers 1 to 100
2. Print all odd numbers from 1 to 100
3. The modern olympics started in 1896, print the years they have been held
4. FizzBuzz - Write a programme that prints the numbers from 1 to 100. For multiples of three, print "Fizz" instead of the number and for multiples of five, print "Buzz". For numbers which are multiples of both three and five, print "FizzBuzz".

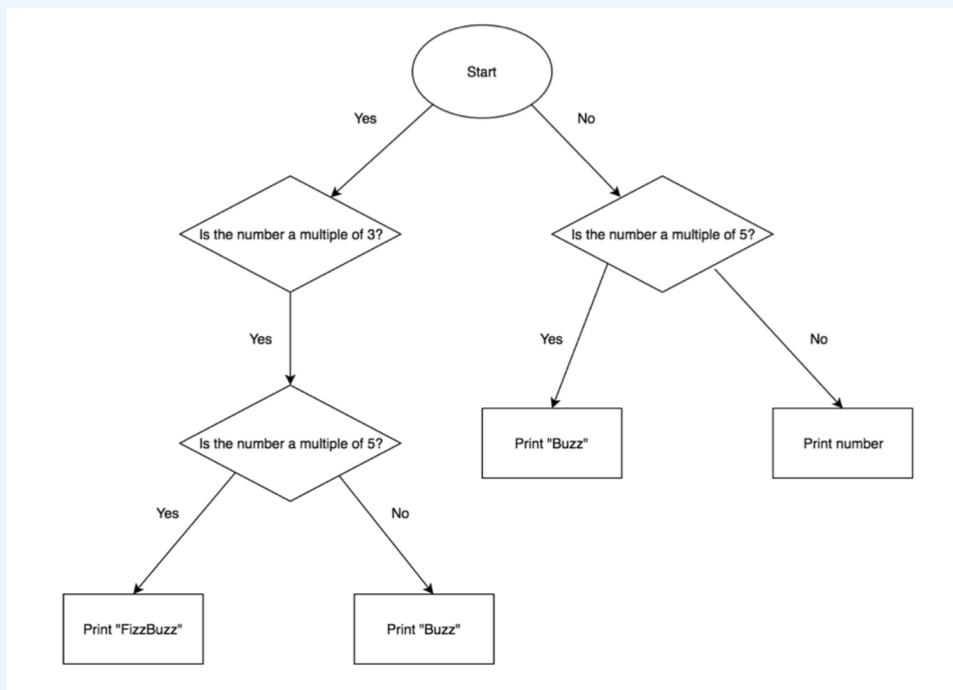
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QUESTIONS

SECTION C

FIZZBUZZ:

```
1
2
fizz
4
buzz
fizz
7
8
fizz
buzz
11
fizz
13
14
fizzbuzz
```



SECTION D

1. Print 10 random numbers
2. Keep asking the user to enter a number until they enter the number 7, then print "Wow lucky number 7!"
 - i. Rewrite so that the number being guessed is a random value from 1 to 10
3. The area of a rectangle is width multiplied by height. Ask the user to enter a width and height in cm², then print the area to the complete square metre (1m² = 10000cm²)
4. Ask the user for a password, if they enter the password "qwerty123", print "You have successfully logged in". If they get it wrong, print "Password failure" and then ask them to enter it again. Only allow them to enter the password wrong 3 times before printing "System Locked!"
 - i. Let the user play 3 times before printing "Game Over!"
 - ii. Keep the scores and print this out after 3 goes.
5. Rock, Paper, Scissors - Create a simple rock, paper, scissors game which is run against computer.
 - i. Let the user play 3 times before printing "Game Over!"
 - ii. Keep the scores and print this out after 3 goes.