Basic:

1. Write a program (function!) that takes a list and returns a new list that contains all the elements of the first list minus all the duplicates.

**Solution:**

first\_list = [38, 36, 5, 6, 21, 37, 8, 81, 21, 36]

def new\_list(x):

new\_list = []

for i in first\_list:

if i not in new\_list:

new\_list.append(i)

print(new\_list)

new\_list(first\_list)

1. Write a function that takes an ordered list of numbers (a list where the elements are in order from smallest to largest) and another number. The function decides whether or not the given number is inside the list and returns (then prints) an appropriate boolean.

**Solution:**

def find(ordered\_list, element\_to\_find):

for element in ordered\_list:

if element == element\_to\_find:

return True

return False

if \_\_name\_\_=="\_\_main\_\_":

l = [2, 4, 6, 8, 10]

print(find(l, 20))

print(find(l, 9))

print(find(l, -10))

print(find(l, 6))

1. Let’s say I give you a list saved in a variable: a = [1, 4, 9, 16, 25, 36, 49, 64, 81, 100]. Write one line of Python that takes this list a and makes a new list that has only the even elements of this list in it.

**Solution:**

a = [1, 4, 9, 16, 25, 36, 49, 64, 81, 100]

even\_number =[num for num in a if num%2 == 0]

print("Even numbers from the given list are: ",even\_number)

Advanced

1. The function picks a number between 0 and 200. Then you should input different values until you guess the hidden number correctly. The function would return “way upper”, “upper”, “lower”, “way lower”, “close”, ”bigo”. It’s your choice to pick the ranges you want to use for responses. The success measure is how intuitive the communication is between the user and the function.

**Solution:**

import random

num\_range = (0, 200)

print("Guess my target number that is between %i and %i.\n"

% num\_range)

target = random.randint(\*num\_range)

answer, i = None, 0

while answer != target:

i += 1

txt = input("Your guess(%i): " % i)

try:

answer = int(txt)

except ValueError:

print(" I don't understand your input of '%s' ?" % txt)

continue

if answer < num\_range[0] or answer > num\_range[1]:

print(" Out of range!")

continue

if answer == target:

print(" Bingo!!")

break

if answer < target: print(" way lower.")

if answer > target: print(" way upper.")

print("\nThanks for playing.")

1. Now do the reverse and you guide the program to get close to (and eventually guess) your number in mind.

**Solution:**

import random

lowBound = 0

highBound = 200

randomNumber = random.randint(lowBound,highBound)

print ("Please type: 1 is high")

print (" 2 is low")

print (" 3 Bingo")

print ("Let me guess: ", randomNumber, " ?")

response = input()

while response != "3":

if response == "2":

lowBound = randomNumber

randomNumber = random.randint (lowBound, highBound)

print ("Is it ", randomNumber, " ?")

response = input()

elif response == "1":

highBound = randomNumber

randomNumber = random.randint (lowBound, highBound)

print ("Is it ", randomNumber, " ?")

response = input()

if response == "3":

print ("Bingo'")

break

1. Now improve your code by limiting the guesses and let the function to guide you after the second guess that as long as the reply is not way up/low. The function can tell you the number is even/odd and/or divisible by 3. Try to compare two functions over one chosen number and count the guesses

**Solution:**

import random

counter = 1

random\_ = random.randint(0, 200)

#print("Random number: " + str(random\_))

divisor = random.randint(2, 6)

cheat = random\_

print("I have generated a random number for you to guess (between 0-200)" )

while counter < 10:

if counter == 5:

print("Nope. Type in 'reveal' to have the random number revealed. ")

if random\_ % divisor == 0:

print("The random number can be divided by " + str(divisor) + ". ")

else:

print("The random number is NOT divisible by " + str(divisor) + ". ")

guess = input("What is your guess? ")

if counter <= 5 and guess.lower() == "cheat":

print("The number is " + str(cheat) +".")

elif int(guess) == random\_:

print("Correct! :)")

print("You took " + str(counter) + " attempts!")

break

elif int(guess) < random\_:

print("Your guess is on lower side. ")

elif int(guess) > random\_:

print("Your guess is on higer side. ")

print("")

counter += 1

if int(guess) != random\_:

print("Sorry, Better Luck Next Time")

1. Again do reverse and make the communication more interesting

**Solution:**

answer = 'yes'

print ("Please, think of a number between 0 and 200. I am about to try to guess it in 10 tries.")

while answer == "yes":

NumOfTry = 10

NumToGuess = 100

LimitLow = 0

LimitHigh = 200

while NumOfTry != 0:

try:

print ("Let me try: ",NumToGuess)

print ("Please type: 1 for my try is high")

print (" 2 for my try is low")

print (" 3 Bingo")

HumanAnswer = int (input("Did I guess it right?"))

if 1 < HumanAnswer > 3:

print ("Please enter a valid option. 1, 2 and 3 are valid choices")

NumOfTry = NumOfTry + 1

if HumanAnswer == 1:

LimitHigh = NumToGuess

print ("Okay, so your number is between ",LimitLow, "and ", LimitHigh)

NumOfTry = NumOfTry - 1

print (NumOfTry, "attempts left")

NumToGuess = int (((LimitHigh - LimitLow)/2) + LimitLow)

if NumToGuess <= LimitLow:

NumToGuess = NumToGuess + 1

if LimitHigh - LimitLow == 2:

NumToGuess = LimitLow + 1

elif HumanAnswer == 2:

LimitLow = NumToGuess

print ("Okay, so your number is between ",LimitLow, "and ", LimitHigh)

NumOfTry = NumOfTry - 1

print (NumOfTry, "attempts left")

NumToGuess = int (((LimitHigh - LimitLow)/2) + LimitLow)

if NumToGuess <= LimitLow:

NumToGuess = NumToGuess + 1

if LimitHigh - LimitLow == 2:

NumToGuess = LimitLow + 1

elif HumanAnswer == 3:

print ("I got it!")

NumOfTry = 0

except:

break

else:

answer = input ('Do you want to play again? (yes/no)')

else:

print ("Thank you for playing.")