**Level 1: Basic ASCII Coding**

1. Research the "ASCII Code"
   1. Explain what ASCII stands for.

ASCII stands for American Standard Code for Information Interchange.

* 1. Explain how to convert a letter into an ASCII coded number.

You can use the ASCII table to find out what each letter’s coded number is and convert the letters to their ASCII coded number.

* 1. Explain how to de-code an ASCII number into a letter.

You can de-code and ASCII number into a letter by using the ASCII table which will show you the coded number and the letter that it represents.

1. Open a new Python Repl and run the sample program provided at the end of this module.
   1. Briefly summarize what the "asciiCodes" list does.

The “asciiCodes” list states the letters with their coded ascii number. Therefore when a letter or number is entered, the program can display the correct output.

* 1. Briefly summarize what the "textCoder" function does.

The “textCoder” function codes the specified text character into a three digit number padded with zeroes.

* 1. Briefly summarize what the "textDeCoder" function does.

The “textDeCoder” function decodes the three digit number padded with zeroes into the text character that it represents.

* 1. Briefly summarize what the main program code does  
     The main program code is to help you code a password and also decode a password.

1. Explain the main limitation of the program.

The main limitation of the program would be that it is only limited to a few letters rather than more which would make it easier to make better passwords. It would also help to decode other numbers as all numbers would be covered.

**Level 2: Extending The Program**

1. Modify the sample program to do the following (Still using the ASCII code):
   1. Code all of the uppercase and lower case letters
   2. Code the digits 0 to 9
   3. Code at least 5 special characters (e.g. "1?$%&")
2. Verify that your program works for ***coding*** a message containing all of the basic and special characters.
   1. Provide a sample of your program output below.

Coded string is: 104 101 108 108 111 000 098 111 098 033

1. Verify that your program works for ***de-coding*** a message containing all of the basic and special characters.
   1. Provide a sample of your program output below.

DeCoded string is: hello bob!

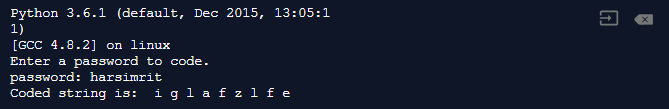
1. List your program modifications below:

asciiCodes = [("!",33),("'",39),(",",44),(".",46),("0",48),("1",49),("2",50),("3",51),("4",52),("5",53),("6",54),("7",55),("8",56),("9",57),("?",63),("A",65),("B",66),("C",67),("D",68),("E",69),("F",70),("G",71),("H",72),("I",73),("J",74),("K",75),("L",76),("M",77),("N",78),("O",79),("P",80),("Q",81),("R",82),("S",83),("T",84),("U",85),("V",86),("W",87),("X",88),("Y",89),("Z",90)]

asciiCodes += [("a",97),("b",98),("c",99),("d",100),("e",101),("f",102),("g",103),("h",104),("i",105),("j",106),("k",107),("l",108),("m",109),("n",110),("o",111),("p",112),("q",113),("r",114),("s",115),("t",116),("u",117),("v",118),("w",119),("x",120),("y",121),("z",122)]

**Level 3: Creating A Secret Code**

1. Modify the sample program to create your own secret code that is different from the ASCII code:
   1. Work with a partner to create a secret code that codes letters and characters into different letters and characters.
   2. Your program should be able to create a coded message that   
      you can give to your partner
   3. Your program should be able to de-code a coded message that   
      you get from your partner
2. Provide a sample of your program output below.
   1. Show how your program codes a secret message



* 1. Show how your program de-codes a secret message

1. List your program modifications below:

"""

This program is currently immited to converting only the

characters "ABCD" and "abcd". The "asciiCodes" list can be easily

extended to include more letters and special characters.

This program currently uses the ASCII codes for converting text.

You can easily create your own secret code by changing the numbers

in the "asciiCodes" list.

"""

codes = [("A","C"),("B","Y"),("C","K"),("D","T"),("E","Q"),("F","H"),("G","R"),("H","N"),("I","B"),("J","V"),("K","X"),("L","G"),("M","E"),("N","S"),("O","A"),("P","Z"),("Q","J"),("R","W"),("S","U"),("T","L"),("U","P"),("V","I"),("W","F"),("X","O"),("Y","D"),("Z","M")]

codes = [("a","g"),("b","j"),("c","o"),("d","x"),("e","z"),("f","q"),("g","v"),("h","i"),("i","f"),("j","t"),("k","p"),("l","b"),("m","z"),("n","u"),("o","d"),("p"",w"),("q","m"),("r","l"),("s","a"),("t","e"),("u","r"),("v","n"),("w","h"),("x","k"),("y","s"),("z","c"),("!","mn"),("'","ty"),(",","li"),(".","ub"),("0","kh"),("1","bn"),("2","af"),("3","gy"),("4","rd"),("5","aa"),("6","lb"),("7","ag"),("8","re"),("9","sc"),("?","ig")]

# This function codes the specified textChar into a

# three digit number padded with zeroes

def textCoder(textChar) :

for textCode in codes :

if (textCode[1] == textChar) :

return format(textCode[0])

return " "

def textDeCoder (codedChar) :

if (codedChar == "") or (codedChar == "000") :

return " "

for textCode in codes :

if (textCode[1] == codedChar) :

return textCode[0]

return " "

# MAIN PROGRAM CODE STARTS HERE

print("Enter a password to code.")

textIn = input("password: ")

codeOut = ""

for textChar in textIn :

codedChar = textCoder(textChar)

codeOut = codeOut + codedChar + " "

#print("char: ",textChar," ASCII Coded char: ", codedChar)

print("Coded string is: ",codeOut)

print(" ")

print("Enter a coded password to decode")

print("(or return to use the Coded string)")

codeIn = input("Code: ")

if codeIn == "" :

codeIn = codeOut

codeList = codeIn.split(" ")

textOut = ""

for codedChar in codeList :

if (codedChar != "") :

textChar = textDeCoder(codedChar)

textOut = textChar

#print("ASCII Coded char: ", codedChar," decoded char: ",textChar)

print("DeCoded string is: ",textOut)

**Appendix: Sample Program**

"""

This program is currently immited to converting only the

characters "ABCD" and "abcd". The "asciiCodes" list can be easily

extended to include more letters and special characters.

This program currently uses the ASCII codes for converting text.

You can easily create your own secret code by changing the numbers

in the "asciiCodes" list.

"""

asciiCodes = [("A",65),("B",66),("C",67),("D",68)]

asciiCodes += [("a",97),("b",98),("c",99),("d",100)]

# This function codes the specified textChar into a

# three digit number padded with zeroes

def textCoder(textChar) :

for textCode in asciiCodes :

if (textCode[0] == textChar) :

return format(textCode[1],'03')

return "000"

def textDeCoder (codedChar) :

if (codedChar == "") or (codedChar == "000") :

return " "

for textCode in asciiCodes :

if (textCode[1] == int(codedChar)) :

return textCode[0]

return " "

# MAIN PROGRAM CODE STARTS HERE

print("Enter a password to code.")

textIn = input("password: ")

codeOut = ""

for textChar in textIn :

codedChar = textCoder(textChar)

codeOut = codeOut + codedChar + " "

#print("char: ",textChar," ASCII Coded char: ", codedChar)

print("Coded string is: ",codeOut)

print(" ")

print("Enter a coded password to decode")

print("(or return to use the Coded string)")

codeIn = input("Code: ")

if codeIn == "" :

codeIn = codeOut

codeList = codeIn.split(" ")

textOut = ""

for codedChar in codeList :

if (codedChar != "") :

textChar = textDeCoder(codedChar)

textOut += textChar

#print("ASCII Coded char: ", codedChar," decoded char: ",textChar)

print("DeCoded string is: ",textOut)