**Level 1: Basic ASCII Coding**

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

**Abbreviated from American Standard Code for Information Interchange.**

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

**You can use the letters on the ASCII code chart to decipher the decimal number code by using the number starting at 65-90 that is the capital letters from A-Z, and 97-122 that is the lower case letters a-z.**

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

1. **You can use the decimal number on the ASCII code chart to decipher the number code by using the number starting at 65-90 that is the capital letters from A-Z, and 97-122 that is the lower case letters a-z.**
2. 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 ascii code decodes the letter of ABCD and abcd with the ascii number code, and the other way around to decode the numbers.**

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

**It asks for a code/password in letters than makes it into decimal numbers from ascii code.**

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

**You put in the number decimal code form the ascii to then convert into letters.**

* 1. Briefly summarize what the main program code does  
     **The main program code does is to decode the code from ascii chart to either letters or numbers.**

1. Explain the main limitation of the program.

**The main limitation of the program is that you can only use 4 letter/numbers from the ascii chart.**

**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.

**Hi my name is Gobina!**

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.

**072 105 032 109 121 032 110 097 109 101 032 105 115 032 071 111 098 105 110 097 033**

1. List your program modifications below:

asciiCodes = [("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)]

asciiCodes += [("0",48),("1",49),("2",50),("3",51),("4",52),("5",53),("6",54),("7",55),("8",56),("9",57)]

asciiCodes += [("!",33),("?",63),("$",36),("%",37),(" ",32)]

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

**Enter a password to code.**

**password: We are Good Kids!**

**Coded string is: 084 098 029 120 111 098 029 068 108 108 097 029 072 102 097 112 030**

**Enter a coded password to decode**

**(or return to use the Coded string)**

**Code: 084 098 029 120 111 098 029 068 108 108 097 029 072 102 097 112 030**

**DeCoded string is: We are Good Kids!**

1. List your program modifications below:

asciiCodes = [("A",88),("B",89),("C",90),("D",65),("E",66),("F",67),("G",68),("H",69),("I",70),("J",71),("K",72),("L",73),("M",74),("N",75),("O",76),("P",77),("Q",78),("R",79),("S",80),("T",81),("U",82),("V",83),("W",84),("X",85),("Y",86),("Z",87)]

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

asciiCodes += [("0",55),("1",56),("2",57),("3",48),("4",49),("5",50),("6",51),("7",52),("8",53),("9",54)]

asciiCodes += [("!",30),("?",60),("$",33),("%",34),(" ",29)]

**It goes back three numbers from the Ascii code.**

**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)