**Level 1: Basic ASCII Coding**

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

* American standard code for information interchange
  1. Explain how to convert a letter into an ASCII coded number
* Input text to convert it into a number
  1. Explain how to de-code an ASCII number into a letter
* You look at what number the letter is

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

* It lists the ascii codes that you currently have
  1. Briefly summarize what the "textCoder" function does
* It codes the specified textchar into a three digit number padded with zero’s
  1. Briefly summarize what the "textDeCoder" function does
* It makes python understand the code
  1. Briefly summarize what the main program code does
* The main code converts the ascii into your chosen password

1. Explain the main limitation of the program.

* You have limited space for more letters and code

**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. asciiCodes = [("A",65),("B",66),("C",67),("D",68)]
3. asciiCodes += [("a",97),("b",98),("c",99),("d",100)]
4. asciiCodes = [("E",69),("F",70),("G",71)("H",72)]
5. asciiCodes += [("e",101),("f",102),("g",103),("h",104)]
6. asciiCodes = [("I",73),("J",74)("K",75)("L",76)]
7. asciiCodes += [("i",105),("j",106),("k",107),("l",108)]
8. asciiCodes = [("M",77)("N",78),("O",79),("P",80)]
9. asciiCodes += [("m",109),("n",110),("o",111),("p",112)]
10. asciiCodes = [("Q",81),("R",82),("S",83),("T",84)]
11. asciiCodes += [("q",113),("r",114),("s",115),("t",116)]
12. asciiCodes = [("U",85),("V",86),("W",87),("X",88)]
13. asciiCodes += [("u",117),("v",118),("w",119),("x",120)]
14. asciiCodes = [("Y",89),("Z",90)]
15. asciiCodes += [("y",121),("z",122)]
    1. Code the digits 0 to 9
16. asciiCodes += [("0",48),("1",49),("2",50),("3",51),("4",52),("5",53),("6",54),("7",55),("8",56),("9",57)]
    1. Code at least 5 special characters (e.g. "1?$%&")
17. asciiCodes = [("!",33),("#",35),("$"36),("%"37),("\*",42)]
18. 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.

Enter a password to code.

password: hello my name is liam ! 123

Coded string is: 104 101 108 108 111 000 109 121 000 110 097 109 101 000 105 115 000 108 105 097 109 000 033 000 049 050 051

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.

Enter a password to code.

password: Hello $ $

Coded string is: 072 101 108 108 111 000 036 000 036

Enter a coded password to decode

(or return to use the Coded string)

Code: 072 101 108 108 111 000 036 000 036

DeCoded string is: Hello $ $

1. List your program modifications below:

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

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

asciiCodes += [("E",69),("F",70),("G",71),("H",72)]

asciiCodes += [("e",101),("f",102),("g",103),("h",104)]

asciiCodes += [("I",73),("J",74),("K",75),("L",76)]

asciiCodes += [("i",105),("j",106),("k",107),("l",108)]

asciiCodes += [("M",77),("N",78),("O",79),("P",80)]

asciiCodes += [("m",109),("n",110),("o",111),("p",112)]

asciiCodes += [("Q",81),("R",82),("S",83),("T",84)]

asciiCodes += [("q",113),("r",114),("s",115),("t",116)]

asciiCodes += [("U",85),("V",86),("W",87),("X",88)]

asciiCodes += [("u",117),("v",118),("w",119),("x",120)]

asciiCodes += [("Y",89),("Z",90)]

asciiCodes += [("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),("#",35),("$",36),("%",37),("\*",42)]

**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

**password: oette**

**Coded string is: 107 097 112 112 097**

Enter a coded password to decode

(or return to use the Coded string)

Code: 107 097 112 112 097

DeCoded string is: kappa

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

password: oette

Coded string is: 107 097 112 112 097

**Enter a coded password to decode**

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

**Code: 107 097 112 112 097**

**DeCoded string is: kappa**

1. List your program modifications below:

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

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

asciiCodes += [("E",69),("F",70),("G",71),("H",72)]

asciiCodes += [("e",97),("f",102),("g",103),("h",104)]

asciiCodes += [("I",73),("J",74),("K",75),("L",76)]

asciiCodes += [("i",105),("j",106),("k",107),("l",108)]

asciiCodes += [("M",77),("N",78),("O",79),("P",80)]

asciiCodes += [("m",109),("n",110),("o",107),("p",112)]

asciiCodes += [("Q",81),("R",82),("S",83),("T",84)]

asciiCodes += [("q",113),("r",114),("s",115),("t",112)]

asciiCodes += [("U",85),("V",86),("W",87),("X",88)]

asciiCodes += [("u",117),("v",118),("w",119),("x",120)]

asciiCodes += [("Y",89),("Z",90)]

asciiCodes += [("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),("#",35),("$",36),("%",37),("\*",42)]

**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)