**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

You find the letter/character in the ASCII chart and you choose if you want to code it in dec, oct or hex. Then, you use the number in the same row as your letter/character in the column of the code you have decided.

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

First you determine whether the number is dec, oct, or hex. Then you find the letter in the same row as your number.

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 asciiCode list is a list of numbers given to the characters in the list.

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

It codes the character that is inputted

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

It decodes the code to what it was originally before it was coded

* 1. Briefly summarize what the main program code does

It first asks you for a password, then it codes, using the decoder. I will only show what you have wrote if it is ABCD because those are the only ones programed

1. Explain the main limitation of the program.

Only A, B, C and D are programmed.

**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. "!?$%&")
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.

Enter a password to code.

password: Nam!K&8

Coded string is: 078 097 109 033 075 038 056

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 coded password to decode

(or return to use the Coded string)

Code: 035 065 119 101 115 048 109 101

DeCoded string is: #Awes0me

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.

"""

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),("&",38),("#",35),("$",36),("%",37)]

# 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("What do you want to code?")

textIn = input("Secret Message: ")

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)

**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

What do you want to code?

Secret Message: Hey

Coded string is: 702 1010 1210

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

Enter a coded password to decode

(or return to use the Coded string)

Code: 702 1010 1210

DeCoded string is: Hey

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.

"""

asciiCodes = [("A",65),("B",606),("C",670),("D",68),("E",609),("F",700),("G",71),("H",702),("I",730),("J",74),("K",705),("L",760),("M",77),("N",708),("O",790),("P",80),("Q",801),("R",820),("S",83),("T",804),("U",850),("V",86),("W",807),("X",880),("Y",89),("Z",900),]

asciiCodes += [("a",970),("b",98),("c",909),("d",1000),("e",1010),("f",102),("g",1003),("h",1004),("i",1050),("j",106),("k",1007),("l",1008),("m",1090),("n",110),("o",1011),("p",1102),("q",1130),("r",114),("s",1015),("t",1106),("u",1170),("v",118),("w",1019),("x",1200),("y",1210),("z",122)]

asciiCodes += [("0",408),("1",490),("2",50),("3",501),("4",520),("5",53),("6",504),("7",550),("8",506),("9",570)]

asciiCodes += [("!",33),("&",308),("#",350),("$",36),("%",307)]

# 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("What do you want to code?")

textIn = input("Secret Message: ")

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)