**Level 1: Basic ASCII Coding**

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

* American Standard for Information Interchange
  1. Explain how to convert a letter into an ASCII coded number
* To input texts to convert it into an “ASCll” number
  1. Explain how to de-code an ASCII number into a letter
* Using the decimal or hexadecimal you can use the number to find the character.
* You can use an “ASCII Table” you figure out what the number equals to letter
* Or you can use an “ASCII Converter” online to fugure to out what the numbers mean in characters.

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 has all the numbers with what the number equals with the character
* It has the letters of “ASCII”
* along with the numbers of the “ASCII”
  1. Briefly summarize what the "textCoder" function does
* It codes or relates with the “Textchar”
* It converts it into three 3 digits number padded with zero
  1. Briefly summarize what the "textDeCoder" function does
* Python text decoder is basic way of python to make a understanding “ASCII” coding
  1. Briefly summarize what the main program code does
* It tells you to enter a password with characters and with special characters
* It takes the text from the input
* and sends back the “ASCII” code back out with numbers
* and uses the text characters to convert it into numbers

1. Explain the main limitation of the program.

* It can’t use other methods to convert the code
* has limitations on how long the code is

**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 lowercase letters
   2. Code the digits 0 to 9
   3. Code at least 5 special characters (e.g. "1?$%&")

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

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

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)]

1. 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 kash ! # $ % \* K A

Coded string is: 104 101 108 108 111 000 109 121 000 110 097 109 101 000 107 097 115 104 000 033 000 035 000 036 000 037 000 042 000 075 000 065 000

1. Verify that your program works for ***decoding*** 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)]

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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

* gaab
  1. Your program should be able to de-code a coded message that   
     you get from your partner

1. Provide a sample of your program output below.
   1. Show how your program codes a secret message

**Enter a password to code.**

**password: gak**

**Coded string is: 107 112 100**

Enter a coded password to decode

(or return to use the Coded string)

Code: 107 112 100

DeCoded string is: bad

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

Enter a password to code.

password: gak

Coded string is: 107 112 100

**Enter a coded password to decode**

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

**Code: 107 112 100**

**DeCoded string is: bad**

1. List your program modifications below:

**asciiCodes = [("A",75),("B",66),("C",67),("D",68)]**

**asciiCodes += [("a",112),("b",107),("c",99),("d",100)]**

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

**asciiCodes += [("e",101),("f",102),("k",100),("h",76)]**

**asciiCodes += [("I",73),("J",74),("K",97),("L",104)]**

**asciiCodes += [("i",105),("j",106),("g",107),("p",80)]**

**asciiCodes += [("M",77),("N",78),("O",79),("P",108)]**

**asciiCodes += [("m",109),("n",110),("o",115),("l",112)]**

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

**asciiCodes += [("q",113),("r",114),("s",111),("t",116)]**

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**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)

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

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

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

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

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