**Presentation Notes**

1. What does the ASCII acronym stand for?

ASCII stands for American Standard Code for Information Interchange.

1. What is the ASCII code used for?

ASCII code is used for representing and storing text in computers (binary). It is also used for encoding text for electronic communication (sending and receiving computers must both agree).

1. Encoding characters (i.e. letters on the keyboard) into ASCII code numbers
   1. What is the ASCII code for the letter “A”  
      The ASCII code for the letter “A” is 65.
   2. What is the ASCII code for the letter “a”  
      The ASCII code for the letter “a” is 97.
   3. Why are they different?  
      They are different because upper and lower case letter are different symbols. The computer doesn’t know what the alphabet is or how to read and write.
   4. What is the ASCII code for the space bar?

The ASCII code for the space bar is 32.

1. Decoding ASCII code numbers into characters and letters
   1. What character corresponds to ASCII code 61 decimal  
      The character corresponding to ASCII code 61 decimal is =.
   2. What character corresponds to ASCII code 8 decimal  
      The character that corresponds to ASCII code 8 decimal is backspace.
   3. Why is the character 8 not the same as ASCII code 8  
      Character 8 is not the same as ASCII code 8 because character “8” is a text symbol and code 8 is a number. Symbols and numbers are different things to a computer.
   4. What is the range of non-printable characters in ASCII?

The range of non-printable characters in ASCII is code 0 to 31.

1. How would you code the string “Hello” in ASCII?

H e l l o  
72 101 108 108 111

1. How would you code the string “127” in ASCII?  
    1 2 7  
   49 50 55
2. What is the difference between 127 and “127”?

The difference between 127 and “127” is that 127 is a integer number, computers don’t need to use ASCII for numbers. “127” is a string of text symbols.

**Student Questions**

1. Why do computers have to convert characters (i.e. letters on the keyboard) into numbers? Why can’t computers just use the letters directly?  
   Computers have to convert characters into numbers because computers don’t understand characters, it only understands numbers. Computers can’t use letters directly because computers first need to convert the letters into numbers. Computers use binary system because there are less computational errors.
2. How do computers communicate with people who speak different languages and use different alphabets? What is used instead of the ASCII code table?

A computer will convert ASCII language to letters, numbers, symbols, and punctuation marks to communicate with humans. The characters are within the UFT and Unicode.

1. Research online-documentation for the Python **ord()** function. Provide some sample code that demonstrates the use of the **ord()** function.

The ord() function is used for classifying what letter represents what integer. i.e. print((ord(‘a’))), 97 in decimal while display on the other side on python.

1. Research online-documentation for the Python **chr()** function. Provide some sample code that demonstrates the use of the **chr()** function.

The chr() is function is the opposite of ord() function. i.e. print((chr(74))), 72 in decimal on the other side of Phython.

1. Write a Python program that uses the ord() and chr() functions to do the following:
   1. Read a single character (i.e. single letter or keyboard symbol) from the console input.
   2. Convert the character to an ASCII code number.
   3. Add 3 to the code number.
   4. Convert the new code number back to a character (i.e. single letter or keyboard symbol)
   5. Print the new character to the console output.

myCharacter = input ("Please enter a character ")

print (ord(myCharacter))

myCode = (ord(myCharacter))

print (myCode + 3)

print ("Your new character is:")

print(chr(myCode + 3))

1. Enhance your program to add the following features:
   1. After reading the single character from console input, check to make sure that the character is a letter (i.e. a to z or A to Z). Print a warning message if the character is not a letter.
   2. After converting the code number back to a character, print a “\*” if the character is not a letter.

myCharacter = input ("Please enter a character ")

myCode = (ord(myCharacter))

if (127 > myCode or myCode < 65):

print ('warning: this character is not a letter')

print (ord(myCharacter))

print (myCode + 3)

print ("Your new character is:")

print(chr(myCode + 3))

myNewCode = (myCode + 3)

if (myNewCode > 127 or myNewCode < 65):

print ("\*")

**Extension (Optional)**

1. Extend your program to operate on a string read in from the console input.
   1. Use a loop to process the string as a sequence of single characters
   2. Use your original code process the characters
   3. Append the characters to make a new output string
   4. Print the new string to console output

myCharacter = input ("Please enter a character ")

index = 0

while (index < 4):

print(ord(myCharacter[index]))

index = index + 1