**Presentation Notes**

1. What does the ASCII acronym stand for?

American Standard Code for Information Interchange

1. What is the ASCII code used for?

Representing and storing text in a computer

Computers can only understand numbers (binary)

Text symbols must be encoded as numbers

1. Encoding characters (i.e. letters on the keyboard) into ASCII code numbers  
   sending and receiving computers must both agree and understand the same encoding standard
   1. What is the ASCII code for the letter “A”  
      65
   2. What is the ASCII code for the letter “a”  
      97
   3. Why are they different?  
      Upper case and lower case are different symbols. The computer doesn't really know what the alphabet is or how to read and write.
   4. What is the ASCII code for the space bar?

The ASCII code also includes some un- printable characters

1. Decoding ASCII code numbers into characters and letters   
   1. What character corresponds to ASCII code 61 decimal  
      the equal sign(=)
   2. What character corresponds to ASCII code 8 decimal  
      BS (backspace)
   3. Why is the character 8 not the same as ASCII code 8  
      Character 8 is a text symbol, 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

0-31

1. How would you code the string “Hello” in ASCII?  
   using the numbers in decimal H: 72 e:101 l:108 l:108 o:111
2. How would you code the string “127” in ASCII?  
   1:49 2:50 7:55
3. What is the difference between 127 and “127”?

127 is an integer number. Computers don’t need to use the ASCII for numbers.

“127” is a string of text symbols. A human might see this as the number 127.

**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?  
   Since computers only understand numbers (binary) the letters must be turned in to numbers then turned back into letters because of that reason.
2. How do computers communicate with people who speak different languages and use different alphabets? What is used instead of the ASCII code table?

* Latin-1 (Western European languages)
* Latin-2 (Non-Cyrillic Central and Eastern European languages)
* Latin-3 (Southern European languages and Esperanto)
* Latin-5 (Turkish)
* Latin-6 (Northern European and Baltic languages)
* 8859-5 (Cyrillic)
* 8859-6 (Arabic)
* 8859-7 (Greek)
* 8859-8 (Hebrew)

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

Letter = (input("please enter your letter: "))

Letter = ord(Letter)

print(Letter)

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

a = int(input("please enter your number: "))

a = chr(a)

print (a)

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.
2. b = input("please enter a random letter: ")
3. if (b.isalpha()) == False:
4. print("final number \*")
5. b = ord(b)
6. b = b + 3
7. b2 = chr(b)
8. print("your number is", b)
9. print("your letter is", b2)
10. 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 lett
    2. After converting the code number back to a character, print a “\*” if the character is not a letter.
11. b = input("please enter a random letter: ")
12. while (b.isalpha()) == False:
13. print("WARNING: you cannot use a number please enter a letter next time")
14. break
15. b = ord(b)
16. b = b + 3
17. b2 = chr(b)
18. print("your number is", b)
19. print("your letter is", b2)

**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