**Presentation Notes**

1. What does the ASCII acronym stand for?

American Standard Code for Information Interchange.

1. What is the ASCII code used for?

ASCII code is used for representing text as numbers so it can be encoded into numbers the computer can understand.

1. Encoding characters (i.e. letters on the keyboard) into ASCII code numbers  
   1. What is the ASCII code for the letter “A”

65

* 1. What is the ASCII code for the letter “a”

97

* 1. Why are they different?

Upper case and lower case numbers are different letters.

* 1. What is the ASCII code for the space bar?

32

1. Decoding ASCII code numbers into characters and letters   
   1. What character corresponds to ASCII code 61 decimal

=

* 1. What character corresponds to ASCII code 8 decimal

backspace

* 1. Why is the character 8 not the same as ASCII code 8

Because the first few ASCII codes are non-printable so the symbol 8 would not fit as the ASCII number 8 since it’s taken by backspace. The numbers in ASCII correspond with symbols, they are not symbols themselves.

* 1. What is the range of non-printable characters in ASCII

0-35

1. How would you code the string “Hello” in ASCII?  
     
   72, 101, 108, 108, 111
2. How would you code the string “127” in ASCII?  
     
   49, 50, 55
3. What is the difference between 127 and “127”?

127 is the ASCII code for delete whereas “127” is a string of 49, 50, 55 to a computer.

**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 can’t use letters directly because computers operate off of numbers and not letters. Computers operate off of math and the math present in binary code letters do not relate to numbers by themselves so ASCII numbered letters for computers.

1. How do computers communicate with people who speak different languages and use different alphabets? What is used instead of the ASCII code table?

Instead of ASCII being used for languages other than English, Unicode is used since ASCII does not have the proper amount of numbers to store all of those characters.

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

Ord tranfers a string of length 1 to its ASCII representation.

print (ord("a"))

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

Chr transfers a number to its Unicode representation.

print (chr(66))

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.

i = 1

while i == 1:

characterInput = str(input("Please type one letter or one number "))

if len(characterInput) == 1 and characterInput:

i = 2

else:

print("Please try again.")

characterOutput = chr(ord(characterInput) + 3)

print (characterOutput)

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.

i = 1

while i == 1:

characterInput = str(input("Please type one letter "))

if len(characterInput) == 1 and characterInput:

i = 2

else:

print("Please try again.")

if characterInput not in "AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSsTtUuVvWwXxYyZz":

print ("Warning: Character is not a letter")

characterOutput = chr(ord(characterInput) + 3)

if characterInput not in "AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSsTtUuVvWwXxYyZz":

print ("\*")

print ("The answer is ", characterOutput)

**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

characterInput = str(input("Please type some letters "))

outputList = ""

i = 0

while i < len(characterInput):

n = characterInput[i]

if n not in "AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSsTtUuVvWwXxYyZz":

print ("Warning: Character is not a letter")

characterOutput = chr(ord(n) + 3)

if n not in "AaBbCcDdEeFfGgHhIiJjKkLlMmNnOoPpQqRrSsTtUuVvWwXxYyZz":

print ("\*")

outputList = outputList + characterOutput

i += 1

print (outputList)