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**Presentation Notes**

* What does the ASCII acronym stand for?

American Standard Code for Information Interchange

* What is the ASCII code used for?
* Representing and storing text in computers
* Computers can only understand numbers (binary)
* Text symbols must be encoded as numbers
* Encoding text for electronic communication (e.g. web)
* Sending and receiving computers must both agree and understand the same encoding standard
* Encoding characters (i.e. letters on the keyboard) into ASCII code numbers
* What is the ASCII code for the letter “A”65
* What is the ASCII code for the letter “a”97
* 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.

* What is the ASCII code for the space bar?

The ASCII code also includes some "un-printable" characters.

* Decoding ASCII code numbers into characters and letters
* What character corresponds to ASCII code 61 decimal=
* What character corresponds to ASCII code 8 decimal backspace
* Why is the character 8 not the same as ASCII code 8

Character "8" is text symbol, code 8 is an number. Symbols and numbers are different things to a computer.

* What is the range of non-printable characters in ASCII Codes 0 to 31

* How would you code the string “Hello” in ASCII?  
  72101108108111
* How would you code the string “127” in ASCII?  
    
  495055
* What is the difference between 127 and “127”?

127 is an integer number. Computers don't need to use ASCII for numbers.  
"127" is a string of text symbols. A human might see this as the number 127. A computer doesn't know it's a number.

**Student Questions**

**Why do computers have to convert characters (i.e. letters on the keyboard) into numbers? Why can’t computers just use the letters directly?**

Representing text. When any key on a keyboard is pressed, it needs to be converted into a binary number so that it can be processed by the computer and the typed character can appear on the screen. A code where each number represents a character can be used to convert text into binary. This directly corresponds to there either being an electrical current those characters, because binary is actually 2 states of the computer

* How do computers communicate with people who speak different languages and use

Unicode is a 16-bit character set where all characters occupy the same space. ... In most character sets a single value is often assigned to several characters. For example, in ASCII a "-" is used to represent a hyphen, a minus sign, a dash and a non-breaking hyphen. In Unicode each meaning is given its own code.

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

# inbuilt function return an

# integer representing the Unicode code

value = ord("A")

# writing in ' ' gives the same result

value1 = ord('A')

# prints the unicode value

print value, value1

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

# Python program to illustrate

# chr() builtin function

print(chr(71), chr(101),

chr(101), chr(107),

chr(115), chr(32),

chr(102), chr(111),

chr(114),chr(32),

chr(71), chr(101),

chr(101), chr(107),

chr(115))

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

value = str(input("Enter a number:"))

number = ord(value)

print(ord(value))

newNumber = number + 3

print(chr(newNumber))

* Enhance your program to add the following features:
* 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.
* After converting the code number back to a character, print a “\*” if the character is not a letter.

**Extension (Optional)**

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

letter = str(input)

symbol = ord(letter)

if (symbol >= 97) and (symbol <= 122) :

print (symbol)

elif (symbol >= 65) and (symbol <= 90) :

print (symbol)

elif (symbol < 97) or (symbol > 122) :

print ("\*")

elif (symbol < 65) or (symbol > 90) :

print ("\*")