Chapter 5 - Digital Data\ASCII\ASCII_string_converter.html

```
<!DOCTYPE html>
<html>
    <head>
        <title>ASCII String Converter</title>
        <style>
            body {
            padding: 15px 0;
            text-align: center;
            background: linear-gradient(90deg, rgb(2, 184, 17) 44%, rgb(0, 255, 255) 100%);
            font-family:'Trebuchet MS', 'Lucida Sans Unicode', 'Lucida Grande', 'Lucida Sans', Arial, sans-serif;
            color: rgb(25, 0, 37)
            }
            div{
                text-align: center;
                font-family:Cambria, Cochin, Georgia, Times, 'Times New Roman', serif;
                font-size: 150%;
                background-color: #0077ff;
                width: 75%;
                border: 5px solid rgb(8, 0, 116);
                padding: 25px;
                margin: auto
            }
        </style>
        <script>
            // Image Citations: https://simple.wikipedia.org/wiki/ASCII

            // Description: Converts a binary number to decimal
            // Citation: baseConverter.html
            // Input/Parameters: Binary number
            // Output/Return: Converted decimal number
            function binToDec(binaryNumber) {
                // Split array into individual indices
                let binaryArray = binaryNumber.split("");

                // Reverse the array, store back in the same variable
                binaryArray = binaryArray.reverse();

                // Store our final answer (decimal)
                let decimalAnswer = 0;

                // Loop through each individual digit in the binary number
                for (let i = 0; i < binaryArray.length; i++) {
                    // Grab the digit at index i, convert to a number
                    let digit = Number(binaryArray[i]);
                    // Multipliying the digit by its place value
                    let digitValue = digit * (2 ** i);
                    // Adding the digit value to the total
                    decimalAnswer += digitValue;
                }
                return decimalAnswer;
            }
            // Description: Converts a decimal number to binary
```

```
53              // Citation: baseConverter.html
54              // Input/Parameters: Decimal number
55              // Output/Return: Converted binary number
56              function decToBin(decimalNumber) {
57                  let binaryAnswer = "";
58
59                  // While loop that run until we get the value of 0
60                  while (decimalNumber != 0) {
61                      // Find the remainder after dividing by 2
62                      let remainder = decimalNumber % 2;
63                      // Add the remainder to the binaryAnswer
64                      binaryAnswer += remainder;
65                      // Use integer division to create a new decimalNumber
66                      decimalNumber = Math.floor(decimalNumber / 2);
67                  }
68                  // Reverse our binaryAnswer
69                  let binaryArray = binaryAnswer.split("");
70                  binaryArray.reverse();
71                  binaryAnswer = binaryArray.join("");
72
73                  // Return the final binaryAnswer
74                  return binaryAnswer;
75              }
76              // Description: Takes a string and converts it to the binary equivalent
77              // Citation: None
78              // Input/Parameters: String
79              // Output/Return: Binary equivalent
80              function convertToBinaryASCII(stringInput){
81                  let stringArray = stringInput.split("");
82                  let stringLength = stringArray.length;
83                  let binaryOutput = ""
84                  for (let i=0; i<stringLength; i++) {
85                      let character = stringArray[i]
86                      character = character.charCodeAt(0)
87                      let binaryInteger = decToBin(character)
88                      while (binaryInteger.length < 8){
89                          binaryInteger = "0" + binaryInteger;
90                      }
91                      binaryOutput += binaryInteger + " "
92                  }
93                  return binaryOutput;
94              }
95              // Description: Takes a binary number and converts it to the string equivalent
96              // Citation: None
97              // Input/Parameters: Binary number
98              // Output/Return: String equivalent
99              function convertToString(binaryInput){
100                 let binaryArray = binaryInput.split(" ");
101                 let arrayLength = binaryArray.length;
102                 let stringOutput = ""
103                 for (let i=0; i<arrayLength; i++) {
104                     let character = binaryArray[i]
105                     character = binToDec(character)
106                     character = String.fromCharCode(character)
107                     stringOutput += character + ""
108                 }
```

```
                return stringOutput;
            }
            // Description: Displays the final converted value
            // Citation: None
            // Input/Parameters: None
            // Output/Return: Final converted value
            function displayResult(){
                let inputValue = idInputValue.value
                let selected = idSelectConversion.value
                let output = "";
                if (selected == "String to Binary") {
                    output = convertToBinaryASCII(inputValue)
                }
                else if (selected == "Binary to String") {
                    output = convertToString(inputValue)
                }
                idOutputValue.innerHTML = output;
            }
        </script>
    </head>
    <body>
        <h1>ASCII Converter</h1>
        <h2>Convert between binary and string representations of ASCII</h2>
        <img src="ASCII_table.jpg" height="300">
        <br>
        <textarea id="idInputValue" placeholder="Input goes here (ASCII expressed either as binary string or decimal string)"rows="10" cols="50"></textarea>
        <br>
        <br>
        <select id="idSelectConversion">
            <option>String to Binary</option>
            <option>Binary to String</option>
        </select>
        <br>
        <br>
        <input type="button" value="Display Result" onclick="displayResult()">
        <br>
        <br>
        <div id="idOutputValue"></div>
    </body>
</html>
```