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CS 171

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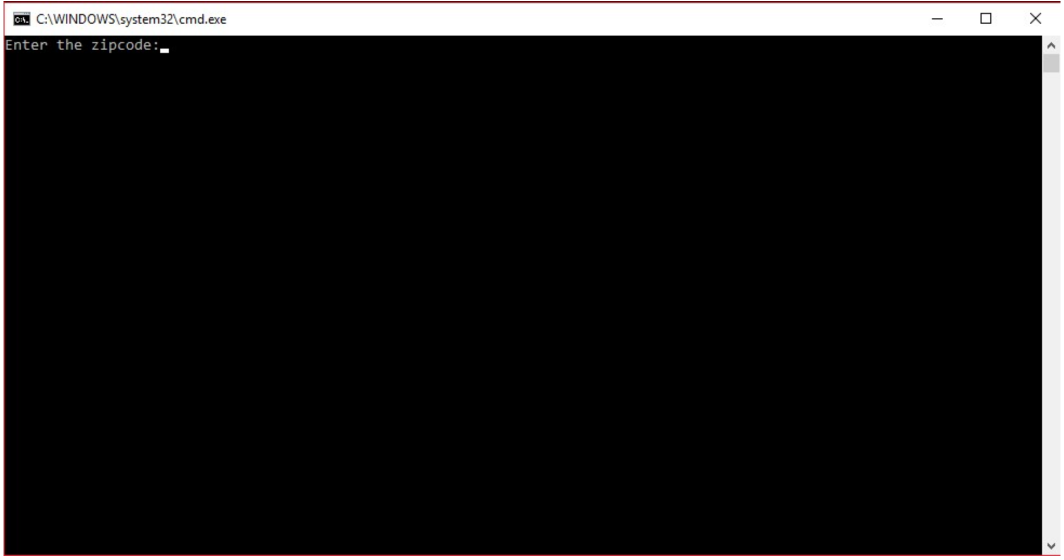
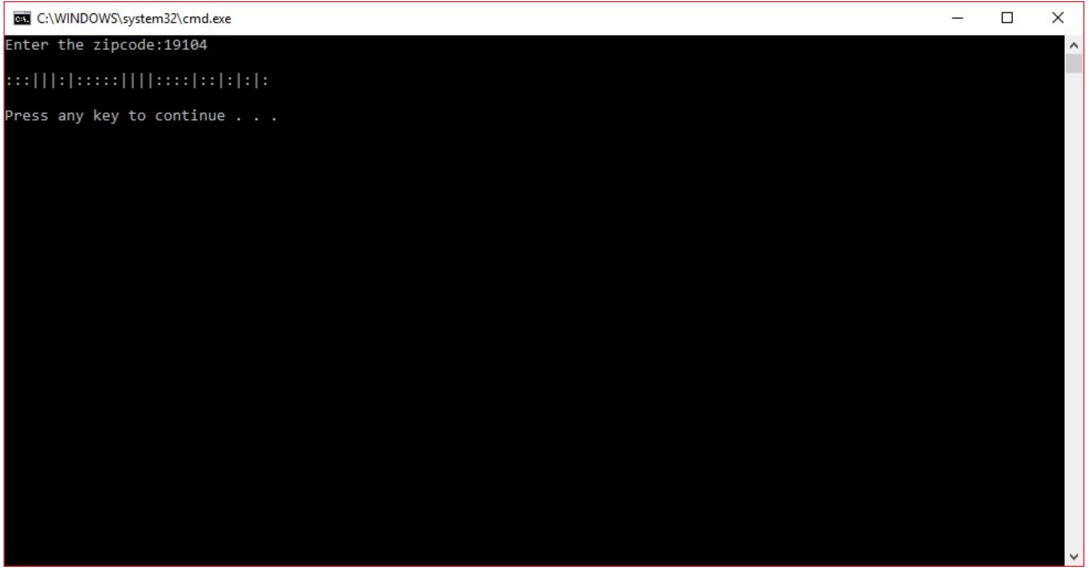
Zip-code to Barcode

- User Manual
  - As soon as one compiles and runs the program, the first line to be seen would be: "Enter the zipcode:"



```
Enter the zipcode:_
```

  - The user is expected to enter the corresponding value, with the following conditions.
    - The value shouldn't be negative.
    - The number of digits shouldn't exceed 5;
  - The user then won't be required to enter anything in the program.



```
Enter the zipcode:19104

:::|||:|:::::||||::::|::|:|:|:

Press any key to continue . . .
```

  - The program would print out the converted Barcode, including the Check Digit.

- System Manual
    - There are 3 functions that I defined, and a main (as usual); In addition to those there are a few constants I used.
    - Here is the list of Constants used:
        - `const string HALFBAR = ":";`
        - `const string FULLBAR = "|";`
        - `const string ONEBAR = "00011";`
        - `const string TWOBAR = "00101";`
        - `const string THREEBAR = "00110";`
        - `const string FOURBAR = "01001";`
        - `const string FIVEBAR = "01010";`
        - `const string SIXBAR = "01100";`
        - `const string SEVENBAR = "10001";`
        - `const string EIGHTBAR = "10010";`
        - `const string NINEBAR = "10100";`
        - `const string ZEROBAR = "11000";`
        - `const int NUMBER_OF_DIGITS_IN_A_ZIP_CODE = 5;`
        - `const string ZERO_DIGIT = "0";`
        - `const string ONE_DIGIT = "1";`
    - The first function created is **makeCheckDigit()**:
        - It returns an integer data type value.
        - It takes an integer data type value as an argument.
        - There are 5 variables defined within the function:
            - n: integer type; for assigning the argument for further operations
            - sum: integer type; initialized to 0
            - rem: integer type; short for remainder
            - chkdgt: integer type; short for Check Digit
        - There is a while loop used to add the digits of the zipcode, in order to obtain/calculate the Check Digit.
            - The condition it checks is, if n is not zero.
            - In the loop rem is assigned the value of remainder after dividing n by 10.
            - That rem is then added to the sum.
            - Then n is division assigned 10. i.e. n /=10 or n = n / 10
            - And the loop continues.
        - Then the chkdgt(Check Digit) is returned.
    - The next function created is **convertDigit()**:
        - It returns a string data type value.
        - It takes an integer data type value as an argument.
        - There are no variables defined whatsoever.
        - The only function/method used in the definition of this function is switch case.
            - It takes the argument of the original function, and checks it for different cases.
            - The cases are 0 – 9 integers and returns the constants defined previously. It works in the following way:
                - case 1 returns ONEBAR
                - case 2 returns TWOBAR
                - case 3 returns THREEBAR

        - case 4 returns FOURBAR
        - case 5 returns FIVEBAR
        - case 6 returns SIXBAR
        - case 7 returns SEVENBAR
        - case 8 returns EIGHTBAR
        - case 9 returns NINEBAR
        - case 0 returns ZEROBAR
- The next function created is **barcode()**:
    - It returns a string data type value.
    - It takes an integer data type value. Here that is the zipcode.
    - There are total 7 variables:
        - n: integer type; for assigning the argument for further operations
        - r: integer type; used to update the value of n in the program
        - bcode: string type; used to store the barcode value as a string
        - substring: string type; short for substring, used to store the substring
        - i: integer type; loop variable
        - j: integer type; used to divide with the powers of 10
        - x: integer type; loop variable
    - There are 2 loops in total
        - First loop isolates the digits in the zip code
        - Second loop checks each index of the barcode