The US Postal Services uses bar codes to represent zip codes in order to sort them quickly using machines. The machine will read the bar code and direct the letter to the right location. Write a C++ program that generate bar codes. The program should read the zip code and determines the complete bar code. The code is represented by a series of short and long bars. The following table shows the barcodes for each digit.

Value	Encoding
1	ıııll
2	ılıl
3	ıllı
4	ılıl
5	ılılı
6	ıllıı
7	lııl
8	lılı
9	lılıı
0	llııı

Use ':' and '|' to represent short and long bars.

A check digit is also added at the end of the barcode. The check digit is determined by totaling all the digit of the zip code and adding a digit that makes the sum divisible by 10. For example, if the sum of all the digits is 38 then the check digit is 2, if the sum is 40 the check digit is 0, etc.

A long bar is added at the beginning and at the end of the barcode (total of 32 bars). The following is an example of the code 45701 (sum = 17, check digit is 3)

| :|::| :|:|: |:::| ||:::   :::|| ::||: |
         4   5   7   0   1   3
                                               Check
                                               Digit

Your program should generate the codes repeatedly until the user decided to quit. Your program should print an error message if the zip code entered is invalid (for example, non-digit character, fewer or more than 5 digits). You may assume the user will never enter a space between zip code characters.

Your program must include at least the following two functions (**do not change the names or the prototypes**):
- `string getDigitCode (char digit)`: return a barcode for a single digit
- `int getCheckDigitValue(int sum)`: return the check digit

Output your codes as shown below (code and digits). You are encouraged to add other functions.

Sample Run:
```
Enter a zip code: 45701

Code: |:|::| :|:|: |:::| ||::: :::|| ::||:|
         4      5     7     0     1      3
More codes (y/n)? y

Enter a zip code: 456
Error: zip code must be 5 digits
More codes (y/n)? y

Enter a zip code: 56-45
Error: Code is invalid
More codes (y/n)? y

Enter a zip code: 564565
Error: Code is invalid
More codes (y/n)? y

Enter a zip code: 12345
Code: |:::|| ::|:| ::||: :|::| :|:|: :|:|:|
        1      2     3     4     5      5
More codes (y/n)? n
```

Testing:
You can test the correctness of your functions by running the command:
```
    make run_tests
```

The command will also test your program with different input values.
Make sure you have "**make**" installed in wsl.

Grading:

Programs that contain syntax errors will earn zero points.
Programs that do not include functions other than main, will earn zero points.
Programs that use global variables other than constants, will earn zero points.
Programs that use libraries NOT discussed in class will earn zero points.

Your grade will be determine using the following criteria:
- Correctness: the program works as requested above (35 points).
    - (5 points) The code is printed correctly (32 bars)
    - (20 Points) The required functions are implemented

        o   (10 points) Error checking

- **Documentation and Style (5 points)**

Follow the coding style outline on GitHub:

https://github.com/nasseef/cs/blob/master/docs/coding-style.md