CENG218 Labwork 5

Using the Queue code presented in the lecture;

1. Design a C++ program which fills a character queue with inputs entered from the user until "." is entered. The program must filter out repeated characters and display the final queue on screen.

```
Enter: aaaaaaaaaabbccccccdeeeeeee.
Initial size of queue: 27
Dropped chars: a a a a a a a a a b c c c c c c c e e e e e e e
Final size of queue: 5
Final queue: abcde

Enter: abcde.
Initial size of queue: 5
Dropped chars:
Final size of queue: 5
Final queue: abcde

Enter: aaaaaaa.
Initial size of queue: 7
Dropped chars: a a a a a a
Final size of queue: 1
Final queue: a
```

2. Design a C++ program which randomly picks a number between 20 and 70. The user must correctly guess this number before their lives (initial: 5) run out. When the game is over, all guesses must be printed on screen, along with the best guess (i.e. the closest guess to the picked number).

```
I've randomly picked a number between 20 and 70.
Enter your guess: 20
You guessed lower! Lives left: 5
Enter your guess: 50
You guessed higher! Lives left: 4
Enter your guess: 40
You guessed higher! Lives left: 3
Enter your guess: 30
You guessed lower! Lives left: 2
Enter your guess: 35
You guessed higher! Lives left: 1
Enter your guess: 32
You guessed lower! Lives left: 0
You have no lives remaining! Game over! The number was 33.
Your guesses were: 20 50 40 30 35 32
Your best guess was 32.

I've randomly picked a number between 20 and 70.
Enter your guess: 20
You guessed lower! Lives left: 5
Enter your guess: 50
You guessed lower! Lives left: 4
Enter your guess: 60
You guessed higher! Lives left: 3
Enter your guess: 57
You guessed correctly!
Your guesses were: 20 50 60 57
Your best guess was 57.
```

3. Using one queue and one stack (from previous week), design a C++ program which reads a sequence of letters from the user and checks if the entered string is a palindrome or not.

```
Enter your string: racecar
racecar is a palindrome.

Enter your string: abcde
abcde is not a palindrome.
```