Data Structures Assignment # 3
Due time and date: 16:30, Friday, April 30th, 2021
IMPORTANT!

1. Submit your HWs **ONLINE** before the due time and date
2. HW reports should contain:
    a. The description of the problem and proposed solution
    b. The program code
    c. Any program outputs
3. Submitted codes should be well-commented.

Problem
Define a *RestaurantWaitList* class that processes waiting list of customers using a *Deque* (*Double-ended Queue*) ADT. The deque keeps track of the *waiting list of customers* and their *arrival times to the restaurant*.

A customer who is assigned a table is removed from the deque, and added to the *ServedCustomers* list, together with their table number. A customer who is not happy with his/her table is added back to the **front** of the list in order to wait for the next table (the next customer in the waiting list is assigned to the empty table). Customer at the **rear** of the list leaves the restaurant, if his/her waiting time becomes more than 30 mins and there are more than 5 customers waiting.

Implement *RestaurantWaitList* class using a *Doubly Linked List*.

Write a test code, *TestRestaurant*, to show that your implementation is producing correct outputs:

Test Scenario:

- Restaurant opens at 3 pm and closes at 10 pm. There are 5 tables in the restaurant.
- 8 Customers arrive when the restaurant opens at 3 pm.
- After 3 pm, customers arrive in random intervals of 10-20 mins.
- Each customer occupies a table for 30-40 mins.
- At least 1 out of 3 customers will not be happy about his/her table.

You can process the waiting list and served customer list in intervals of 10 mins from 3 pm to 10 pm.

Print at the output: the customer numbers, their arrival and total waiting time, assigned table number or the time when they leave the restaurant without getting served.