Write a java program that compares the performance of the following data structures:

1. BinarySearchTree <Integer> (develop the class yourself).
2. DoublyLinkedList <Integer> (develop the class yourself)
3. HashMap <Integer, Integer> (use HashMap class from the java collection framework)

The performance should be compared based on the following operations

1. Insert – insertion of 5000 random values(without duplicates).
2. Remove – removing of 5000 values selected randomly.
3. Search - searching for 5000 random values. Some values my not exist.
4. Update - updating of 5000 random values.
5. Print - print All data in ascending order .

***Note:*** *You have to provide screen shots of three different runs of the program taken in three different times with a gap of at least one hour.*

The output must be look like the following table:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | | | | |
| **Operations**  **Data**  **Structures:** | Insert  (Total time ms) | Remove  (Total time ms) | Search  (Total time ms) | Update  (Total time ms) | Print  (Total time ms) |
| BinarySearchTree |  |  |  |  |  |
| DoublyLinkedList |  |  |  |  |  |
| HashMap |  |  |  |  |  |