*CS 146 Project 1 Report*

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1. *Working at MusicBest*

This problem required to read input from a text file (Playlist.txt) and then perform the Fisher-Yates algorithm and “shuffle” the songs in the music playlist and then return the shuffled list of songs in a new text file (SinghMaanPlaylist.txt).

In this project, two methods were used:

1. *Fisher-Yates method:*

This method performs the Fisher-Yates algorithm on a given array that is being as a parameter. To implement this, Random class was used, and a seed was set (20) to a random object that was created in the method.

Then setting variables as indexes, the shuffle was successfully performed with the data transferring each time the loop runs.

1. *Main method:*

File class was used in this method to read from text file (Playlist.txt) and the data was stored in the array. After storing the data, the Fisher-Yates method was used on the array to get a shuffled array and then the data was read in a new text file (SinghMaanPlaylist.txt).

For Junit testing of the class, one case to consider is that the seed should be set of the random object should be set to 20 otherwise, the file create will not match with the target file (Target2.txt) used for texting.

1. *Circular linked list game*

This problem is the Josephus problem. It required to create a circular linked list with “n” number of nodes with data 1 to n respectively. Then, the list was traversed k times eliminating the k+1th node from the list and then k was counted from the next node. This was run until we were left with just one node being the “winner” of the Josephus game.

In this project, the method used was:

*isSurvivor method:*

This method creates a circular linked list of prisoners and then eliminates every k+1th element until only one element is left. At the end of the method, the last number is returned that is the survivor of the game!

Cases to consider:

The node pointer after eliminating a node should point to the next node right after it before counting k again.

The circularity of the linked list should be maintained at all costs for the method to work.