

## THE PROCESS

### Working

The main class running the program is named “CircularLinkedList” (In file named DHT.h). All the functionality comes forth by this class making use of all the other sub classes. The class Machine controls the nodes being created for the DHT ring. The AVL class (In file named Tree.h) is then used to create an object of an AVL tree wherever a primary machine is requested to be placed on node of the DHT ring. This AVL tree also manages the data being sent to files and what lines they are placed on respectively. Every Node in this DHT ring has a Doubly Linked List (In file named FTP.h) which contains addresses of all the primary-machines present in the DHT ring at a time. This class creates a finger table for any machine given one at a time to be able to search for them when required. The class “DataPair” (In file named DataPair.h) is used to make a pair of data/value and key to hash it afterwards.

On running the program the user is required to enter the identifier and the total number of machines in the DHT ring. It then requires the user if they would like to assign the machine IDs automatically or manually. When the machines are assigned to their respective nodes it creates AVL trees on the back-end. Each primary-machine in DHT also contains a Doubly Linked List which holds the routing tables. The user is then required to add the data and to which machine they would like to store that data/value in. This is where the Data-Value pair is created and is further processed into the tree and is stored in its respective line on the file. On further request for search in the machine the same technique as inserting is used and the value of the key is thus obtained. Added to this, the functionality to add or remove a machine whenever the user requests.

