

ADVANCED DATA STRUCTURES (COP 5536)

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PROGRAMMING PROJECT REPORT

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Compiling Instructions:

In order to compile the file type:

```
javac hashtagcounter.java
```

To run the file:

```
java hashtagcounter inputFile.txt
```

inputFile.txt is passed as a command line argument to the program.

Program Structure:

The program has 3 classes:

1. Hashtagcounter:

It contains the main class, Node and MaxFiboHeap.

It reads the input file provided by the user and provides the output. The program is exited when it encounters STOP.

2. Node:

It describes the basic structure of the nodes. It consists of attributes like child, parent, sibright, sibleft, nodedata, degree and mark.

3. MaxFiboHeap:

It describes the basic structure of max-fibonacci heap. It uses hash maps for lookup. It consists of methods which helps in creating a Fibonacci heap. Functions used in this class are insert, increasekey, removemax, pairwiseconsume and meldlist.

Function Prototype:

1. **Insert**

Return Type: Void

Parameters: hashname, nodedata

It is used to insert new data in the max-fibonacci heap. If the element already exists in the heap, then it is diverted to IncreaseKey method.

2. Increasekey

Return Type: Void

Parameters: hashname, nodedata

It increases the value of new data element. It then checks if the value of element is greater than the parent value or not. If it is greater than the parent value, then the node is removed and inserted into root level.

3. Removemax

Return Type: Void

Parameters: m, op_file_name

It removes the element having maximum value recursively. Element which is removed is stored in a different node

4. Pairwisecombine

Return Type: Void

Parameters: null

This method is called everytime after the removemax() is done. This method consolidates the heap by combining nodes of equal degree.

5. Meldlist

Return Type: Void

Parameters: node x, node y

This function is used to meld the lists when max node element is deleted from the heap.

6. Printop

Return Type: Void

Parameters: output,, op_file_name

This function is used to write the output in a file specified by the user.

7. Showop

Return Type: Void

Parameters: output,, op_file_name

This function is used to display the output when output file is not given by the user.