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IMPLEMENTATION OF MOBILE CROWD NETWORK FOR EQUALIZED DISTRIBUTION OF WORK PROCESSING

Vandana Sahu*[1], Deepali Vora[2], Santosh Tamboli[3]
[*1]M.E Student, Department Of IT/ Vidyalankar Institute of Technology, India
[2]Assistant Professor, Department Of IT/ Vidyalankar Institute of Technology, India
[3]Assistant Professor, Department Of IT/ Vidyalankar Institute of Technology, India

ABSTRACT

In this project we implement distributed framework for performing a simple computation task through word file with the help of client and server. A central server will take a large file and distribute the file to different devices. Mobile computing devices will then be allowed to connect to the server through android app. Connecting, the devices will assign tasks to complete, and upon completing the tasks, the results will be sent back to the server to be mapped. Each device will get certain line from file to calculate the frequency of each word in the line. When the device will send back the output processing time taken by the device and no of line will be calculated. Once the server will understand which device is working fast more work will be assign to that system automatically. Again the process will be repeat and the final word count and highest number of times words repeated will be calculated in the end. The inherent problems of mobile computing such as resource scarcity, security and low connectivity pose problems for most applications. And the dynamic nature of mobile computing makes interacting and coordinating work difficult. We help by pooling together the processing power of mobile devices within a crowd to form mobile crowd. We explore this concept of 'work stealing' crowd computing in a distributed processing on an opportunistic network and focus on the optimized processing of work.

Keywords: Mobile computing, distributed computing, Crowd network, Work stealing, and load sharing

I. INTRODUCTION

Mobile computing is computing tool wherever is needed irrespective of user movement the inherent problems of mobile computing such as resource scarcity, finite energy and low connectivity. We define 'mobile crowd computing' as a local 'mobile resource cloud' comprising of a collection of local nearby mobile devices, utilized to achieve a common goal in distributed manner. Work distribution in a mobile environment poses a different set of issues than a typical distributed/grid environment.

Crowd computing is a term that has been used only recently in the literature, and has been conceptualized in various ways as being related to crowd sourcing, human computation, social computing, mobile computing.[2] As such different application is in process in different domain like distributed Processing, Vehicular networking and Congestion mitigation. This literature lacks a common definition of crowd computing, and emerging technologies with somewhat similar uses have added to the conceptual confusion. [1]

II. EXISTING SYSTEM

Crowd computing has been described in various ways including distribution of human intelligence tasks to mobile devices, cloud computing with humans, human problem solving with large numbers of people using computers, and broadly as a set of human interaction tools for idea exchange and non-hierarchical decision making.

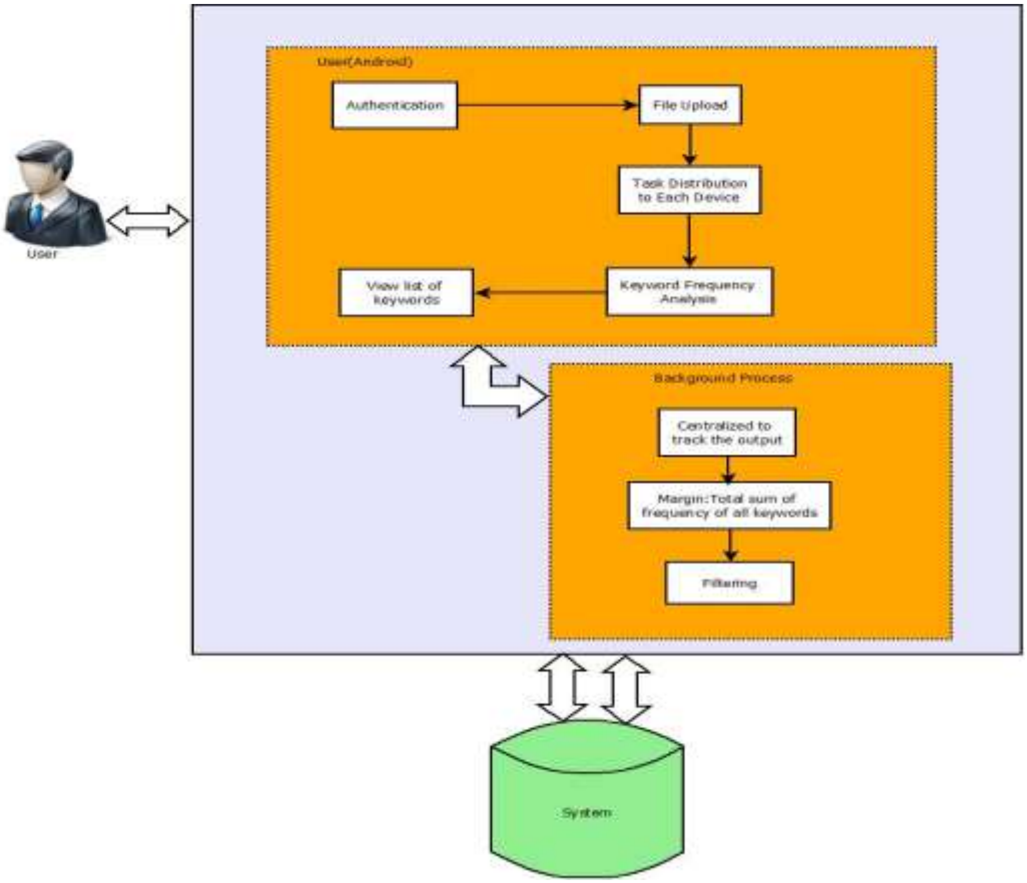
Challenges

- Allow android device to communicate
- Deadlock should not appear between device computations.
- All devices connectivity with the server

- Work distribution according to the processing speed.

III. Proposed System

Distributed computing is a computer processing in which different parts of a program are run simultaneously on two or more computers that are communicating with each other over a network. Distributed computing is a like parallel computing, but the later term is most commonly used to refer to processing in which different parts of a program run simultaneously on two or more processors that are part of the same computer. both types of processing require that a program to be segmented—divided into sections that can run simultaneously, For example, two computers are likely to have different file systems and different hardware components.[6] same way with different hardware and configuration we are connecting mobile device and server and distributing work according to computing power of devices. Work stealing mechanism is the important factor.


User(Android)
Authentication
File Upload
Task Distribution to Each Device
Keyword Frequency Analysis
View list of keywords
User
Background Process
Centralized to track the output
Margin:Total sum of frequency of all keywords
Filtering
System

Module

1. ***Registration:*** Task Manager can register himself by filling some details.

2. ***Login:*** Task Manager can Login into his account with credentials.

3. ***File Upload (Java Swing):*** Task Manager will upload large text file (.txt), which containing lines and keyword. And the system will divide data into lines to make sets.

4. ***Keyword Frequency Analysis (Android):*** There is calculation of keyword frequency in particular line. Time will be tracked and transmitted to Swing module. There will be displayed line, frequency and time

5. ***Tracking Output (Java Swing):*** The output of keyword frequency analysis transmitted to Swing module. i.e. Centralized to track the output

6. ***Merging:*** The margin will be Total sum of frequency of all keywords.

7. ***Filtering:*** The keywords after filtering will be displayed, using GUI system will ask user to enter threshold.

Final output will be list of keywords, total keyword frequency greater than threshold.

IV Algorithm and Calculation Steps

Server Processing

Distribution processing of input into multiple of lines. Each Line is equal to 1 task collection of multiple lines =1 set allocated to 1 device (Dynamic sets when task is transferred from server to device i.e 1 device during allocation).

Mobile Processing

Identify individual task (Line of data) from 1 set of allocated task. Mathematical calculation for 1 task: calculation of unique keywords from particular task (line) will check keywords and count in particular task (line) and transfer this to server accordingly server will check count and keyword and store in database and accordingly allocate task to device.

2.3 Algorithm

Step 1: Input large file consisting more lines of data

Server processing: Distribution of input into multiple sets of lines

Step 2: Each line is equal to 1 Task

Collection of multiple lines = 1 set allocated to 1 device (Dynamic Sets - when task is transferred from server to device i.e 1 device during allocation)

Step 3: Mobile processing: Identify individual task (line of data) from 1 set of allocated task

Mathematical Calculation fro 1 Task :- Calculate Unique Keywords from Particular Tasks (Line of sets) and their corresponding frequency in current Task (line) , will chk keywords and count in particular task (Line) –

and transfer this to server - accordingly server will check count and keyword and store in database and accordingly allocate task to device

Step 4: For Example Hello world this is a new world of Java i am creating

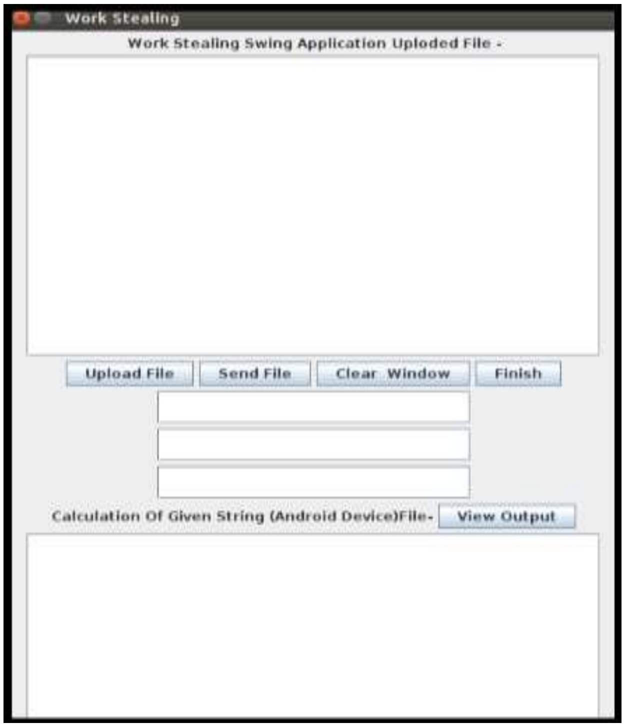
Keyword: hello - check hello: 1, world: 2, this: 1, is: 1 creating: 1 (will calculate term frequency mechanism)

IV. WORKSTEALING RESULTS

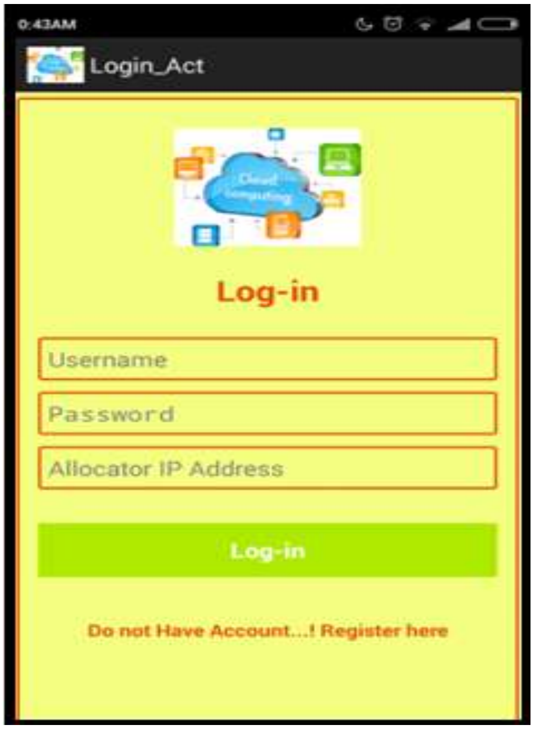
In this section, we describe work stealing methods and the results. Java programming language is used to implement the project. Java multithreading method is used. Project work stealing window will be display. Before we proceed we need to do the connectivity with the client. Server is waiting for the connection. We need to connect the client through android device.

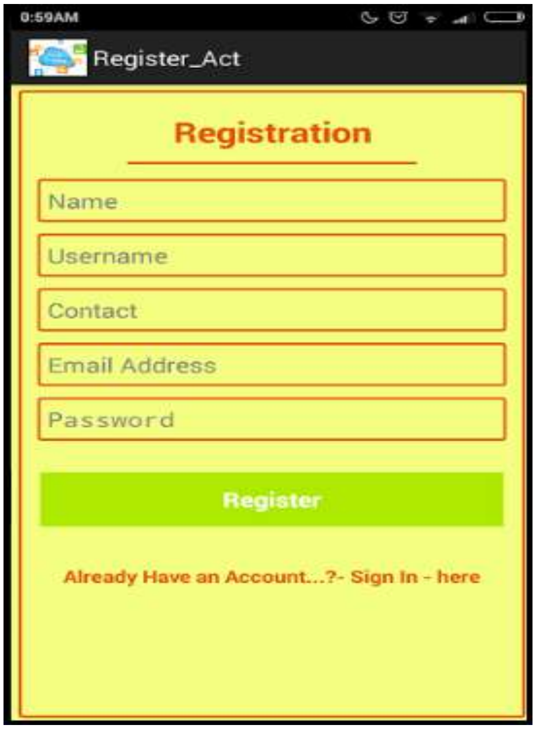
We are using mobile computing power of each device.

Step 1: Start the project work stealing window will be display. Before we proceed we need to do the connectivity with the client.

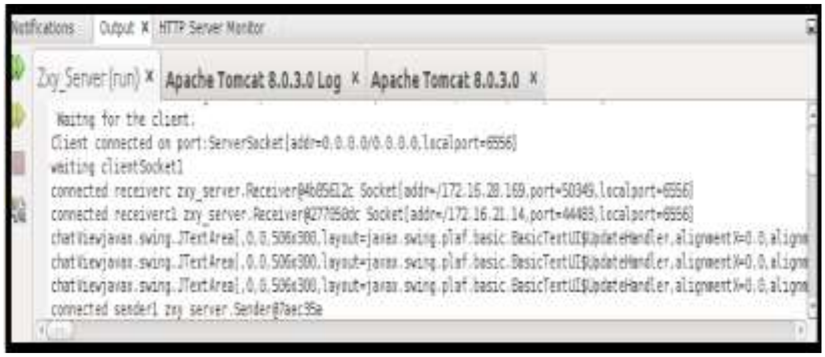

Work Stealing
Work Stealing Swing Application Uploded File -
Upload File
Send File
Clear Window
Finish
Calculation Of Given String (Android Device)File-
View Output

Step 2: Server is waiting for the connection. We need to connect the client through android device. Android device is installed using eclipse. Once the Apk is install we need to login and put allocator ip address. New user can do the registration and then enter into app. Once the detail is filled inside the app. We can do the connectivity with the server by clicking connect button.



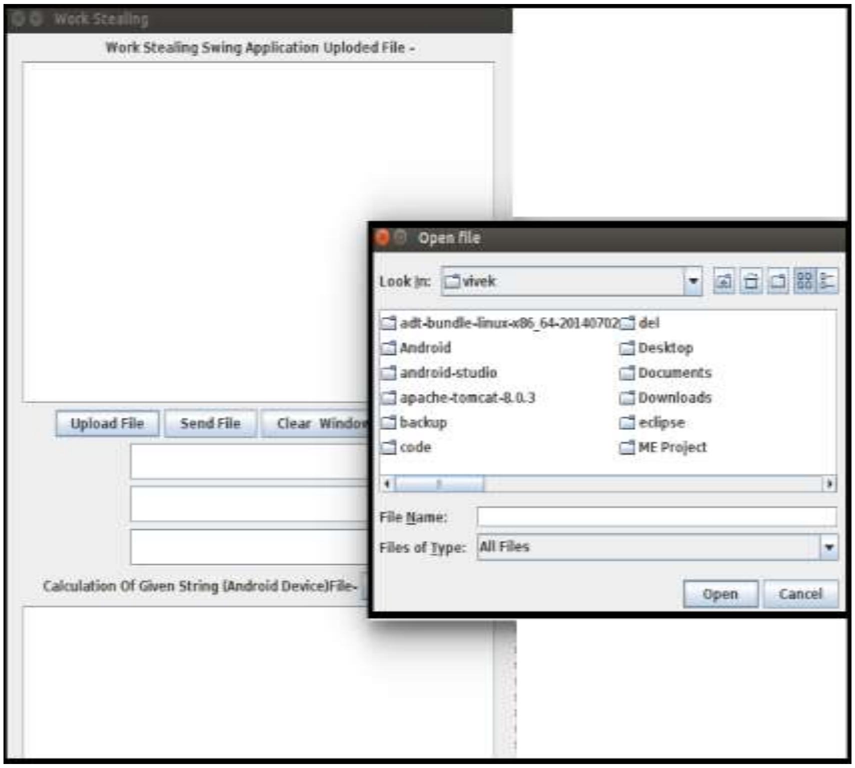


Step 3: Connectivity will be displayed in server side



```
Waitng for the client.
Client connected on port:ServerSocket[addr=0.0.0.0/0.0.0.0,localport=6556]
waiting clientSocket1
connected receiverc zxy_server.Receiver@4b05E12c Socket[addr=/172.16.28.169,port=50349,localport=6556]
connected receiverc1 zxy_server.Receiver@277050dc Socket[addr=/172.16.21.14,port=44483,localport=6556]
chatViewjavax.swing.JTextArea[,0,0,506x300,layout=javax.swing.plaf.basic.BasicTextUI$UpdateHandler,alignmentX=0.0,align
chatViewjavax.swing.JTextArea[,0,0,506x300,layout=javax.swing.plaf.basic.BasicTextUI$UpdateHandler,alignmentX=0.0,align
chatViewjavax.swing.JTextArea[,0,0,506x300,layout=javax.swing.plaf.basic.BasicTextUI$UpdateHandler,alignmentX=0.0,align
connected sender1 zxy server.Sender@7aec35a
```

Step 4: Select the file from the folder and upload it.

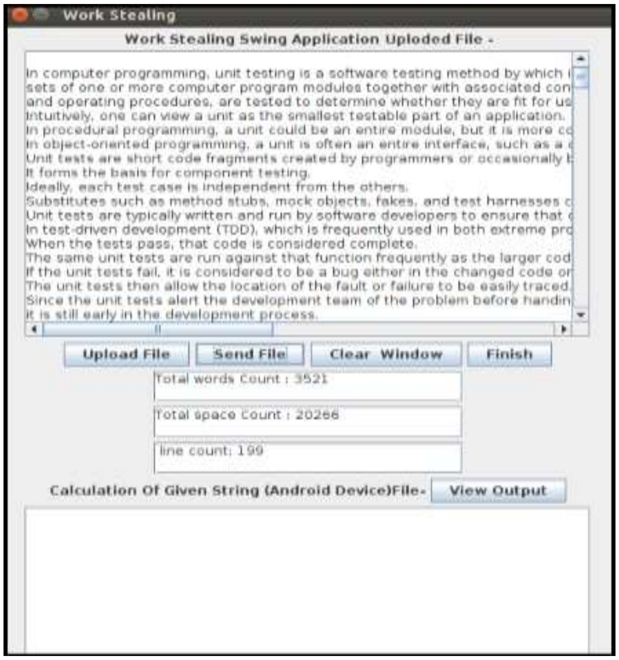


Look In: vivek

Files of Type: All Files

Step 5: File will be uploaded and will be displayed in the following form. Total word count total space count and no of line in the file will be displayed.

1) Clear Window: will clear the screen.
2) Upload File: This button is use to upload the file.
3) Send File: This button will send the file to android devices
4) Finish: Finish button will terminate the program.

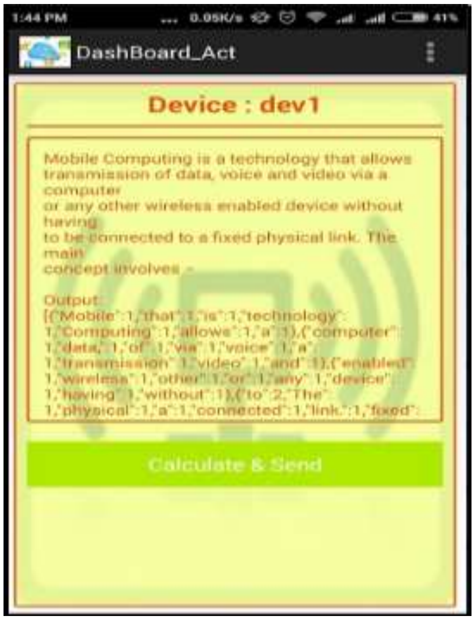

Work Stealing
Work Stealing Swing Application Uploded File -
Upload File
Send File
Clear Window
Finish
Calculation Of Given String (Android Device)File-
View Output

```
In computer programming, unit testing is a software testing method by which i
sets of one or more computer program modules together with associated con
and operating procedures, are tested to determine whether they are fit for us
Intuitively, one can view a unit as the smallest testable part of an application.
In procedural programming, a unit could be an entire module, but it is more co
In object-oriented programming, a unit is often an entire interface, such as a c
Unit tests are short code fragments created by programmers or occasionally b
It forms the basis for component testing.
Ideally, each test case is independent from the others.
Substitutes such as method stubs, mock objects, fakes, and test harnesses c
Unit tests are typically written and run by software developers to ensure that c
In test-driven development (TDD), which is frequently used in both extreme pro
When the tests pass, that code is considered complete.
The same unit tests are run against that function frequently as the larger cod
If the unit tests fail, it is considered to be a bug either in the changed code or
The unit tests then allow the location of the fault or failure to be easily traced.
Since the unit tests alert the development team of the problem before handin
it is still early in the development process.
```

```
Total words Count : 3521
Total space Count : 20266
line count: 199
```

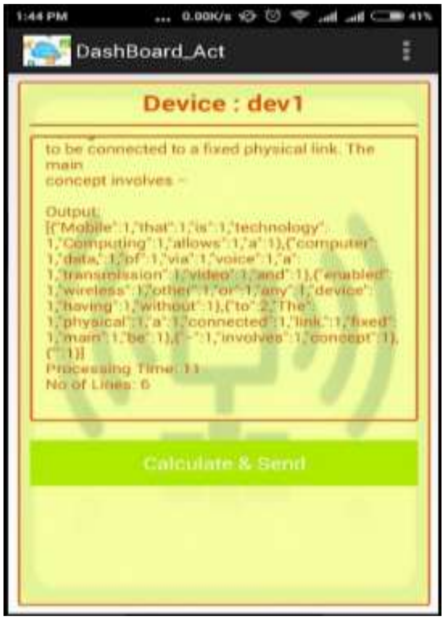
Step 6: Client side receives work in android app. Work processing is done and final output of frequency calculation and no of line is send back to server.

Again work is distributed to the device which ever device have more computation power receive more work automatically. And processing time and frequency is calculated. In this way work stealing and computation power is utilize of mobile device which was getting wasted. And large set of computation work can be easily done through this system



```
Mobile Computing is a technology that allows
transmission of data, voice and video via a
computer
or any other wireless enabled device without
having
to be connected to a fixed physical link. The
main
concept involves -

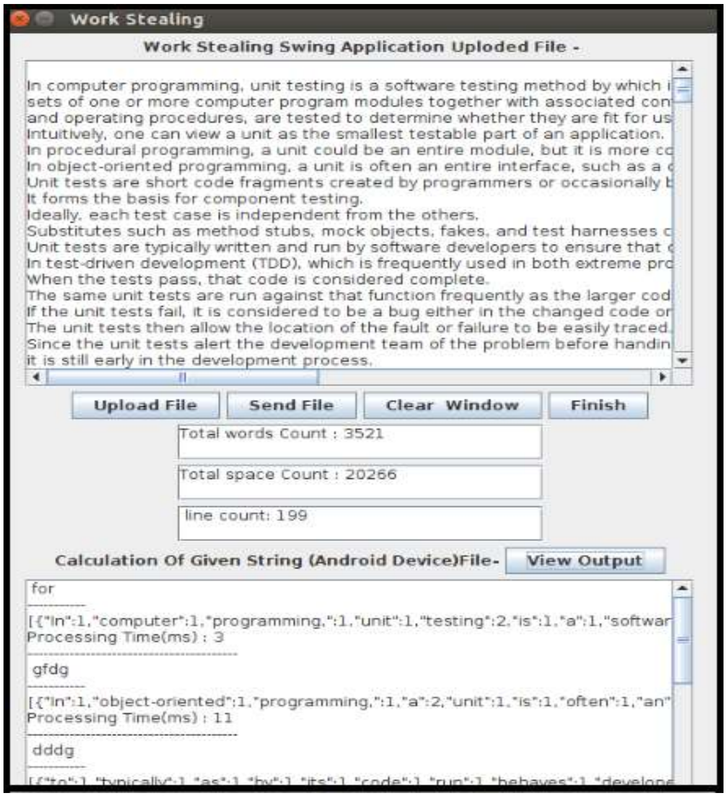
Output:
[{"Mobile":1,"that":1,"is":1,"technology":
1,"Computing":1,"allows":1,"a":1},{"computer":
1,"data,":1,"of":1,"via":1,"voice":1,"a":
1,"transmission":1,"video":1,"and":1},{"enabled":
1,"wireless":1,"other":1,"or":1,"any":1,"device":
1,"having":1,"without":1},{"to":2,"The":
1,"physical":1,"a":1,"connected":1,"link.":1,"fixed":
```



```
to be connected to a fixed physical link. The
main
concept involves -

Output:
[{"Mobile":1,"that":1,"is":1,"technology":
1,"Computing":1,"allows":1,"a":1},{"computer":
1,"data,":1,"of":1,"via":1,"voice":1,"a":
1,"transmission":1,"video":1,"and":1},{"enabled":
1,"wireless":1,"other":1,"or":1,"any":1,"device":
1,"having":1,"without":1},{"to":2,"The":
1,"physical":1,"a":1,"connected":1,"link.":1,"fixed":
1,"main":1,"be":1},{"-":1,"involves":1,"concept":1},
{"":1}]
Processing Time: 11
No of Lines: 6
```

Step 7: Final output of each device is send back to server. In server side we can easily view the fastest computing device through output. Highest repeated word is calculated in the end.



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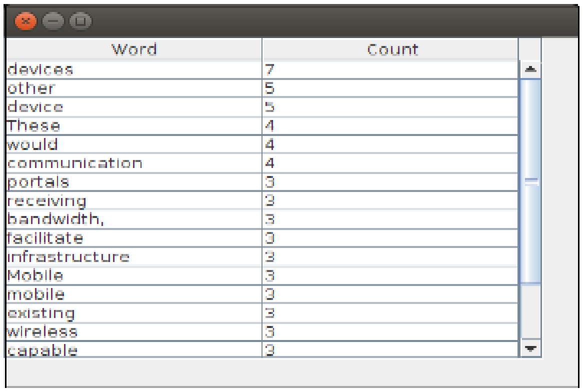
it is still early in the development process.
```

```
Total words Count : 3521
Total space Count : 20266
line count: 199
```

```
for
----------
[{"In":1,"computer":1,"programming,":1,"unit":1,"testing":2,"is":1,"a":1,"softwar
Processing Time(ms) : 3
------------------------------------
gfdg
----------
[{"In":1,"object-oriented":1,"programming,":1,"a":2,"unit":1,"is":1,"often":1,"an"
Processing Time(ms) : 11
------------------------------------
dddg
----------
[{"to":1,"typically":1,"as":1,"by":1,"its":1,"code":1,"run":1,"behaves":1,"develope
```

Step 8: Highest frequency word is counted from the entire document and displayed. This concept can mainly be used in search term frequency count. Large set of document and we need to find out which search query is search highest time. We can easily find out with the help of this application using the mobile device computing power.



Word	Count
devices	7
other	5
device	5
These	4
would	4
communication	4
portals	3
receiving	3
bandwidth,	3
facilitate	3
infrastructure	3
Mobile	3
mobile	3
existing	3
wireless	3
capable	3

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VI. CONCLUSION

In this thesis I have implemented distributed framework for performing computation, on mobile computing devices. The first step was to understand source and nature of the problem in order to identify the aspect for which measure could be develop.

In my implementation I have implemented a research based concept using mobile devices. Main concept here is to utilize the computing power of device and perform large set of computation work. Connecting the device will assign task to complete and upon completing the task result will send back to server to be mapped. Each device will perform the work and will get the processing time taken by that device. Once the server will understand which device is working faster more work will be allocated to that device. Here we are utilizing the work distribution concept and can analysis the time and work management.

VII. REFERENCES

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