

A Project/Dissertation Final Report

on

Creating Cloud Architecture using Subletting

*Submitted in partial fulfillment of the
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B. tech CSE(Cloud Computing and Virtualization)



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Today, smartphones are ubiquitous, every other house has an Alexa, and laptops are getting thinner and lighter by the day without compromising on processing power. a mobile device (smartphones) would have a body- made of metal or plastic, a RAM, a CPU, a hard drive, a motherboard, a keyboard, and a mouse- which could be separate components in the body or touch-based, a screen, a video card, an operating system, software applications, and finally, a network connection. Now the question is can we share these components with others over the internet most probably the answer is No cause currently there is no technology introduced to share mobile resources

After surveying for this, we concluded that there is no research until now. So we came up with the solution to do this we can create an architecture that is a combination of cloud computing and Subletting which helps users to share their resources i.e (storage) over the internet with others. It can done with the help of a mobile application that reserve the storage from the mobile devices and provide that storage to other mobile users.

Programming language that are used to build this application is (Python, java,HTML5) and the platform which are being used is PhoneGap, also known as Apache Cordova, is an open-source mobile app development framework that uses CSS3, HTML5, and JavaScript, to create native applications for Android, Windows, and iOS.

The result and output of this project is going to be a mobile application, which helps users to share their mobile resources over internet and make full utilization of their mobile devices.

This can be the innovation in the mobile technology trends in the future because it combines the advantages of both Cloud computing and subletting thereby providing

Abstract

optimal services for mobile users. This Project has provided an optimal solution for the full utilization of mobile device resources. Then, the issues and finally, the future research directions.

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B.Tech.	Bachelor of Technology
M.Tech.	Master of Technology
BCA	Bachelor of Computer Applications
MCA	Master of Computer Applications
B.Sc. (CS)	Bachelor of Science in Computer Science
M.Sc. (CS)	Master of Science in Computer Science
SCSE	School of Computing Science and Engineering

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CHAPTER-2

Literature Survey

Cloud Computing is referred to as Utility Computing that changes the statement of storing Data (information and run application). Data are stored in the “Cloud” rather than in individual computers. Cloud is referred to as a software and hardware data center that supports users' needs. It proceeded from IBM’s announcement of the “Blue Cloud” effort. In this paper, we take the description of cloud computing provided by The National Institute of Standards and Technology (NIST) [1,2] that covers all the essential aspects of cloud computing: NIST definition of cloud computing: Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. With the fast development of the internet, resources have become more powerful, cheaper, and more available. This development produced a new computing model called CLOUD COMPUTING. In this resources are provided by the On-Demand approach. It is an on-demand information technology service. It is based on dynamically virtualized resources. Example:-Network Server, Storage Application. Now after understanding the concept of cloud computing let us see the concept of subletting.

Subletting. You’ve probably heard the term a few times before, but it’s one of those words that doesn't offer a clear definition. Subletting: A sublet sometimes called a sublease, is a contract under which a tenant rents out their apartment to another individual while their name is still on the lease. The original tenant is referred to as the sub lessor, and the new tenant is referred to as a sub lessee. This differs from simply renting out a room to a roommate. When subleasing, only the original tenant's name is on the lease. In a roommate situation, all tenants are named on the lease.

What would your life be like without your smartphone? This question holds a lot of significance and demands a lot of reflection today, but just two decades ago, this question didn't exist. These dramatic lifestyle changes that occurred over the years are due to advancements in a field called mobile computing. Creating portable devices that allowed network communication changed the world in quite a big way.

Today, smartphones are ubiquitous, every other house has an Alexa, and laptops are getting thinner and lighter by the day without compromising on processing power. Personal computers are losing their popularity as the limitations of mobile computing are slowly becoming overcome. So from the early days of chunky laptops to the paper-thin screens of the present and future, mobile computing is an evolving field of great relevance. Today there is great variety among mobile computing devices, and their capabilities are increasing with each new model released. Now let's dig into it to understand a few things. Usually, a mobile device (smartphones) would have a body made of metal or plastic, a RAM, a CPU, a hard drive, a motherboard, a keyboard, and a mouse- which could be separate components in the body or touch-based, a screen, a video card, an operating system, software applications, and finally, a network connection.

This is around the same as the components of a personal computer, which isn't a mobile device. But mobile devices may have other components too, to make them portable, and certain characteristics that make them different-

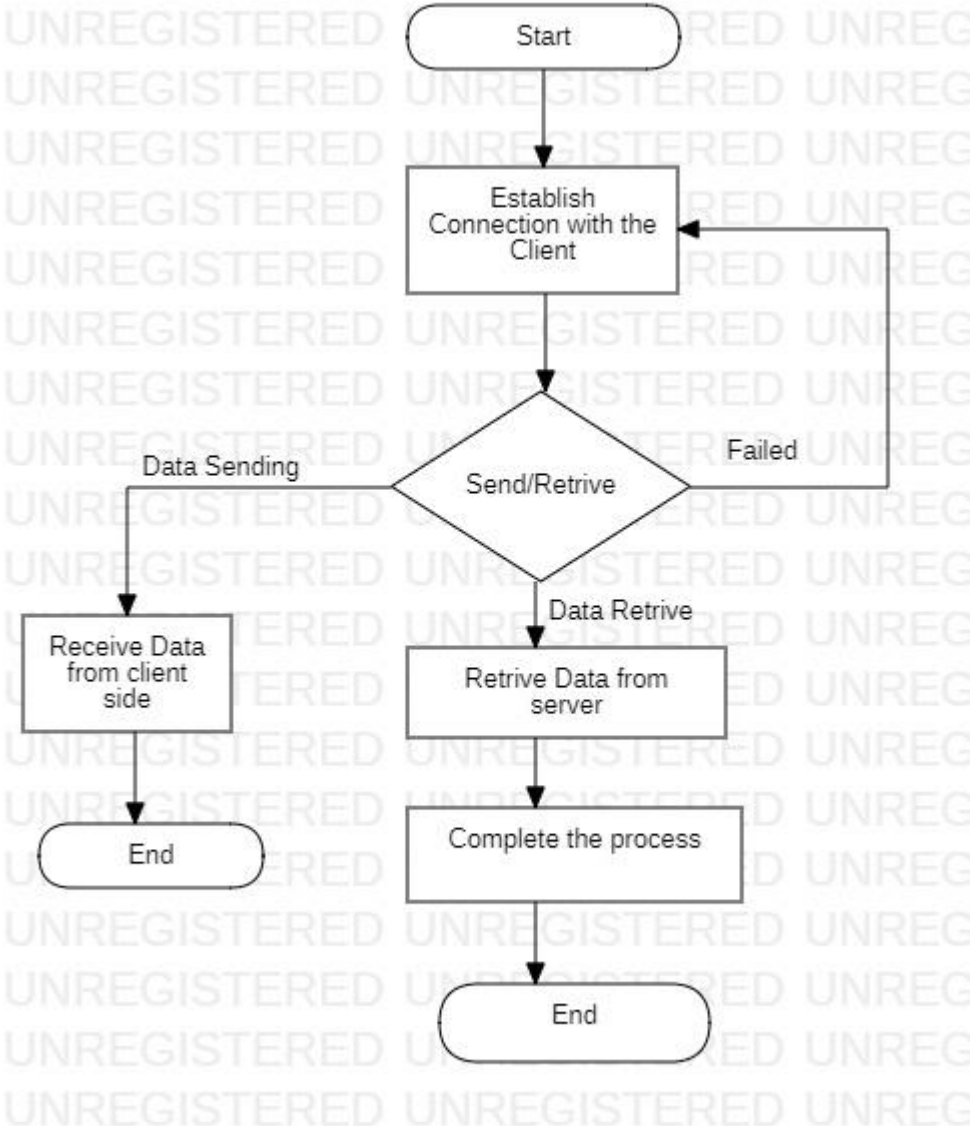
- **Size:** The portability of mobile devices demand a smaller size. Reduction in size without reducing capabilities has also always been a challenge when developing mobile devices.
- **Power Source:** Mobile devices are usually powered by rechargeable batteries. Improving the battery life of mobile devices is another significant area of research.
- **Operating System:** Laptops run on more or less the same OS as PCs, but for smartphones and other devices, the OS is significantly different. They are powerful but scaled-down and made specifically for particular devices.
- **Connectivity:** Mobile computing devices have capabilities that allow access to the internet. Also, mobile devices like smartphones have access to mobile broadband networks that allow you to make and receive phone calls.
- **Applications:** Applications meant for mobile devices are specifically designed for running on a particular OS. These applications are what extend the capabilities of devices beyond just connecting to the internet or making calls.

Other features generally found in mobile computing devices include GPS capability, accelerometer, compass, microphone, camera, and so on. Now the question is can we share these components with others over the internet most probably the answer is No

cause currently there is no technology introduced to share mobile resources over the internet and if your answer is Yes then you might consider cloud computing technology but cloud computing share system resources like networks, servers, storage, applications, and services, etc.

After surveying for this we concluded that there is no research till now. So we came up with the solution to do this we can create an architecture that is a combination of cloud computing and Subletting which helps users to share their resources i.e(storage) over the internet with others.

Following the concept of subletting that is renting the resource from the owner and rent it to others in simple terms we rent storage from mobile devices and provide that storage on on-demand service. It can be done with the help of a mobile application that reserve the storage from the mobile devices and provide that storage to other mobile users.



Challenges

As discussed in the previous section, This can be an advantage for many mobile users and service providers. However, because of the integration of two different fields, is Cloud computing, subletting, and mobile computing. So by keeping these in mind we have to face many technical challenges, which are related to mobile computing, cloud computing. Then the available solutions to address these issues are reviewed.

Issues in the Mobile communication side

1. Low Bandwidth
2. Availability
3. Securit

Conclusion

This can be the innovation in the mobile technology trends in the future because it combines the advantages of both Cloud computing and subletting thereby providing optimal services for mobile users. This research paper has provided an optimal solution for the full utilization of mobile device resources. Then, the issues and Finally, the future research directions.

SOURCE CODE

```
<project xmlns="http://maven.apache.org/POM/4.0.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
http://maven.apache.org/xsd/maven-4.0.0.xsd">
<modelVersion>4.0.0</modelVersion>
<groupId>io.happycoding</groupId>
<artifactId>cloud-storage-hello-world</artifactId>
<version>1</version>
<properties>
<!-- App Engine currently supports Java 11 -->
<maven.compiler.source>11</maven.compiler.source>
<maven.compiler.target>11</maven.compiler.target>
<project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
<jetty.version>9.4.35.v20201120</jetty.version>
<!-- Project-specific properties -->
<exec.mainClass>io.happycoding.ServerMain</exec.mainClass>
<googleCloudProjectId>YOUR_PROJECT_ID_HERE</googleCloudProjectId>
```

```
</properties>
<dependencies>
<!-- Java Servlets API -->
<dependency>
<groupId>javax.servlet</groupId>
<artifactId>javax.servlet-api</artifactId>
<version>4.0.1</version>
</dependency>
<!-- Google Cloud Storage -->
<dependency>
<groupId>com.google.cloud</groupId>
<artifactId>google-cloud-storage</artifactId>
<version>1.113.0</version>
</dependency>
<!-- Jetty -->
<dependency>
<groupId>org.eclipse.jetty</groupId>
<artifactId>jetty-server</artifactId>
<version>${jetty.version}</version>
</dependency>
<dependency>
<groupId>org.eclipse.jetty</groupId>
<artifactId>jetty-annotations</artifactId>
<version>${jetty.version}</version>
</dependency>
</dependencies>
<build>
<plugins>
<!-- Copy static resources like html files into the output jar file. -->
<plugin>
<groupId>org.apache.maven.plugins</groupId>
<artifactId>maven-resources-plugin</artifactId>
<version>2.7</version>
<executions>
<execution>
<id>copy-web-resources</id>
<phase>compile</phase>
<goals>
<goal>copy-resources</goal>
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</goals>
<configuration>
<outputDirectory> ${project.build.directory}/classes/META-INF/resources
</outputDirectory>
<resources>
<resource>
<directory>./src/main/webapp</directory>
</resource>
</resources>
</configuration>
</execution>
</executions>
</plugin>
<!-- Package everything into a single executable jar file. -->
<plugin>
<groupId>org.apache.maven.plugins</groupId>
<artifactId>maven-shade-plugin</artifactId>
<version>3.2.4</version>
<executions>
<execution>
<phase>package</phase>
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<goal>shade</goal>
</goals>
<configuration>
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implementation="org.apache.maven.plugins.shade.resource.ManifestResourceTransf
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<mainClass>${exec.mainClass}</mainClass>
</transformer>
</transformers>
</configuration>
</execution>
</executions>
</plugin>
<!-- App Engine plugin for deploying to the live site. -->
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<plugin>
<groupId>com.google.cloud.tools</groupId>
<artifactId>appengine-maven-plugin</artifactId>
<version>2.2.0</version>
<configuration>
<projectId>${ googleCloudProjectId }</projectId>
<version>1</version>
</configuration>
</plugin>
</plugins>
</build>
</project>
```