Tribhuvan University
Institute of Science and Technology
PATAN MULTIPLE CAMPUS

LEARNING DICTIONARY
(An android application)

A project work submitted for the fulfillment of completion of Bachelors' Degree in
Computer Science and Information Technology, Tribhuvan University, Nepal

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PREFACE

This application is developed for the partial fulfilment for the degree of **Bachelor of Science in Computer Science and Information technology** (BSc.CSIT) of Tribhuvan University (TU) Nepal. So first and formest we would like to thank **Institute of Science and Technology, Tribhuvan University** for providing us this project work. Similarly, we would like to thank Mr**. Rashindra Prasad Yadhav** and **Mr. Er. Mahesh Kumar Yadhav**, Department Chief and Co-Ordinator of Department of Statistics and Computer Science, Patan Multiple Campus, Kathmandu, Nepal.

Our heartfelt thankful goes to **Mr. Bikash Balami**, the supervisor of the project who had been always there to help and co-operate us with his valuable ideas, views and suggestions during the project. Similary we can not remain without thanking our respective parents and guardians from whose love, care and continious toil, we are here to do this project work. Our humble thankful goes to **Miss Sheelu Shrestha** and **Mr. Arjun Siwakoti** for helping us during the development of this project.

At last not the least we too express our thanks to everyone inclusive of friends and others who had been always there for preparing this project work.

ABSTRACT

Learning Dictionary is the online offline dictionary. This dictionary finds the Nepali meaning of the English word using the corpus. The dictionary algorithm takes out all the distinct English to Nepali meaning of the words and store in the device memory and find the meaning when the user searches the words. This dictionary is termed as “Learning Dictionary” because it stores new words as soon as the corpus is updated by the developers.

In this project XML is used for the android screen design of the application and the java for the defining the background activity of the application. For data storage and database the SQL lite for android has been used.

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ABBREVIATIONS USED

BSc.CSIT:	Bachelor of Science in Computer Science and IT
TU:	Tribhuvan University
AVD:	Android Virtual Device
SDK:	System Development Kit
ICS:	Icecream Sandwitch
JB:	Jelly Bean
IDE:	Integreted Development Environment
JDK:	Java Development Kit
JRE:	Java Runtime Environment
IT:	Information Technology
XML:	eXtensible Markup Language
SD Card:	Secure Digital Card
SQL:	Strucured Query Language
UI:	User Interface
AI:	Artificial Intelligence
CBD:	Corpus Based Dictionary
NLP:	Natural Language Processing
JVM:	Java Virtual Machine

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CHAPTER 1
INTRODUCTION

Introduction

1.1 Background

We are always devoted to the easy way of learning. In the current scenario, English is widely used for communication. In context of our country, there are many people who are facing problems in English languages due to various reasons. So there are various English- Nepali dictionaries available in the market today. Such dictionaries come under the category of Bilingual dictionaries

1.1.1 **Bilingual Dictionaries**: It is a type of dictionary which is normally used to translate the words from one language to another language. These types of dictionaries can be of two types unidirectional and bidirectional. Unidirectional dictionaries provide only one way meaning searching whereas the bidirectional can do in the both way.

Our application is based on the learning approaches which is a major component of the AI of the computer science field. Before describing learning, let us briefly know about artificial intelligence and its other factors.

1.1.2 **Artificial Intelligence:** It is a branch of computer science that deals with designing, developing and maintaining the intelligent agents. It is also popularly called robitics as such agents are normally called robots also.

Intelligent Agents: Intelligent agents are the devices or any sofwares that perfoms the tasks automatically with some facts given in them. Such fact stored in the agent's memory is called the knowledge. An agent generally recieves the outer environment though its sensors and show its action to the environment through its actuators. The matching also called the rule firing is done by matching the input with the knowledge and firing the actual rule. Intelligent agents acquire and store facts into its knowledge base by means of learning. Learning are also categorised in two categories.

Supervised Learning: Supervised learning is the machine learning task of inferring a function from labeled training data. The training data consist of a set of training examples. In supervised learning, each example is a pair consisting of an input object (typically a vector) and a desired output value (also called the supervisory signal). A supervised learning algorithm analyzes the training data and produces an inferred function, which can be used for mapping new examples.

Unsupervised Learning: Unsupervised learning is the problem of finding the hidden structure in unlabeled data. Here the term "unlabeled" means there is no desired output for the input data. In this type of learning, since the data given to the learner are unlabeled, there is no reward or error signal to evaluate a potential solution.

1.2 Project Overview

Our project is also concerned with the development of an android based bilingual dictionary. We are now concerned with development of English- Nepali bilingual dictionary. During the development of this application, the concept of NLP, AI is used which results this project to come under the category of AI and NLP project. This project comes under the supervised learning of artificial intelligence beceause we have the knowledge base stored in the memory of the agent i.e. an android device contains all the words and meanings from the online corpus and the searched words' meanings are displayed accordingly.

1.3 Problem Defination

There are various online and offline dictionaries available now a days. But they are of other languages and there are rare for our language. The dictionaries currently available use a database containing meaning of the English word for the given language of the dictionaries. Such dictionaries are limited to certain thousands of the words and needs to be updated with the addition of the words in it. So to overcome the problems created by the traditional dictionaries, a new concept has been arised. The concept is the corpus based dictionary. Before actually diving through the corpus based dictionaries lets us know some terms used in this type of dictionary.

1.3.1 **Corpora:** In linguistic, corpora are the large structured text which is generally used to do statistical analysis and hypothesis testing. Such texts are also used used for checking

occurances and validating the rules within a specific language or territory. The corpora may contain the structured text in a single language which is known as the Monolingual corpora and also might have been formated or devleoped for the side by side comparison of two languages. Such corpus contains the text in two languages and is termed as multilingual corpus.

1.3.2 Corpus Based Dictionaries: The dictionary whose information or vocabulary comes from the structured text called corpus is known as the corpus based dictionaries. Such dictionaries are used mainly to translate words from one language to another language. Like English to Nepali or any other two languages.

1.3.3 **Corpus based vs general dictionaries:** Generally till now dictionaries use the collection of words and meanings stored in some database or some text files or other formats and retrieve meanings of the searched words from the file. In corpus based dictionary, the corpus files are downloaded and are parsed and a database of the words and meanings is created and user searches the meaning in the database for both game and search (in our app). The tradiotional dictionaries are limited to certain thousands of words and needs updatings with the increase of the words. But in case of corpus based dictionaries the addition of words and meanings is easy and need not update in the application or system built with increase of the words. Another interesting advantage in our view in CBD than normal dictionries is the multilingual expansibility.

1.4 Objectives

Since this is a dictionary application, the main objective of the application will be to provide the user with the Nepali meaning of the English word searched by the user. Apart from this the application has the following objectives.

i. User friendly UI: - All the application for any plateform will be finally used by the user. The user may feel tedious or boring if the UI of the application is not good and properly managed. So in Learning Dictionary, we have tried to use the user friendly UI as far as possible. It will help the user to use the application efficiently.

ii. Compatibility: The application “Learning Dictionary” is developed in such a way that it supports the older devices linke Android Froyo and Android Gingerbread. It also

had been made supportable to coming up versions of Android like Kitkat and LemonPie.

iii. Efficient Vocabulary Update: The application will focus on the update of the application's vocabulary frequently with the new words as soon as it is found and. There will be an easy procedure for the user of the application to get his/her application updated with the new words added in the corpuses.

1.5 Scope and Limitations

1.5.1 Scope

The application "Learning Dictionary has its use for the students to search the difficult English words for meanings. It can be useful to the language learners to learn Nepali with the English language.

1.5.2 Limitations

This application is based on the java and the XML. The major limitation of this application is the size of the SD Card that the user is using. Another limitation of the application is the Android lower versions like Cupcake and Donnut since the application is target of the application is from Android Eclair. Currently this application cannot display the parts of speech of the words you are searching. This application can currently show only the Nepali meaning of the words you entered in English.

CHAPTER 2
REQUIREMENT ANALYSIS

2.1 Introduction

The Requirement Analysis focuses on the specification of the services provided by the software under development. It also focuses on the specification of the software boundaries. Requirement analysis is to clearly distinguish new functionalities from existing ones supported by the current running system, and a clear distinction has to be done between their functionalities.

2.2 System Requirement Specification

System requirement specification is a structured set of information that exemplifies the requirements of a system. It is used by analysts to help identify business problems and propose solutions.

It is a process that produces a set of requirements that, when realized, will satisfy an expressed need. It provides a description of what a system's customers expect it to do for them. It is a way of converting raw customer requirements into well-formed and organized ones. It is a method to provide a "black-box" description of what a system should do, in terms of its interactions or interfaces with its external environment. System requirement specification does not result in a set of instructions. We use it to ensure communication between the technical community and agreement on what the system must do to achieve its goals. During design and development, we use it to determine the requirements of the various parts we determine the system must have. We use it to develop test plans. We use it to verify the system operation when we believe we are done.

2.3 Functional Requirements

In software engineering and System Engineering, a functional requirement defines a function of a system or its component. A function is described as a set of inputs, the behavior, and outputs.

Functional requirements may be calculations, technical details, data manipulation and processing and other specific functionality that define what a system is supposed to accomplish. The activities needed to be done from the system are termed as functional requirement and some are given below:

- Manage (add, update & delete) information
- Provide well display facility for users.
- Allow clients to get more information about newly arise words and meanings

2.4 Non-functional Requirement

Requirement that describes not what the software will do, but how the software will do it,

for example, software performance requirements, software external interface requirements, design constraints, and software quality attributes. Nonfunctional requirements are difficult test; therefore, they are usually evaluated subjectively. ”General Observations “non functional requirement – generally informally stated, often contradictory, difficult to enforce during development and evaluate for the customer prior to delivery”

Following are the non- functional requirements in android application development.

- Usability: The application must be easy to use.
- Performance: The application my perform will in terms of input/output, response time, and quality.
- Reliability: The application must be reliable, any meaning word that is presented must be valid, true and correct.
- Adaptability: The application must be adaptable to the change in environment.
- Extensibility: The application must be extensible and modifiable to future features. Application must be updatable based on the arrival of new words.

Feasibility analysis of Learning Dictionary:

Learning Dictionary is the android based application that simplifies user to search the meaning of the words in Nepali from the English language. The following are feasibility analysis of the application.

1. technical feasibilty:

This application is based on the android plateform. The technical requirements of the application to run are as follows:

The system required android based plateform to operate. During the development of the application, the minimum SDK level of the application is set to 7 so it can operate from Android 2.3.0 or above ie Android GINGERBREAD. It is operatable on the androids latest version ie. Android 4.4.2 ie SDK level 19 known as Android KITKAT.

2. Economical feasibility:

Generally it may be expensive or rare to find the English to Nepali dictionary in the market. Though we may find it, it may not give the new words i.e updated Nepali or English words. So it might be difficult and expensive to purchase each new version of the dictionary with new words. Taking this in mind, we have come to develop this application, which can provide the frequent update of the new words in the application from the online stored corpus. So it might be easy and economically feasible to the user of these application than to purchase the new edition of the paper dictionary for each of some thousand new words.

3. Operational feasibility:

This application is operated on the android plateform.

CHAPTER 3
SYSTEM DESIGN

3.1 System diagram

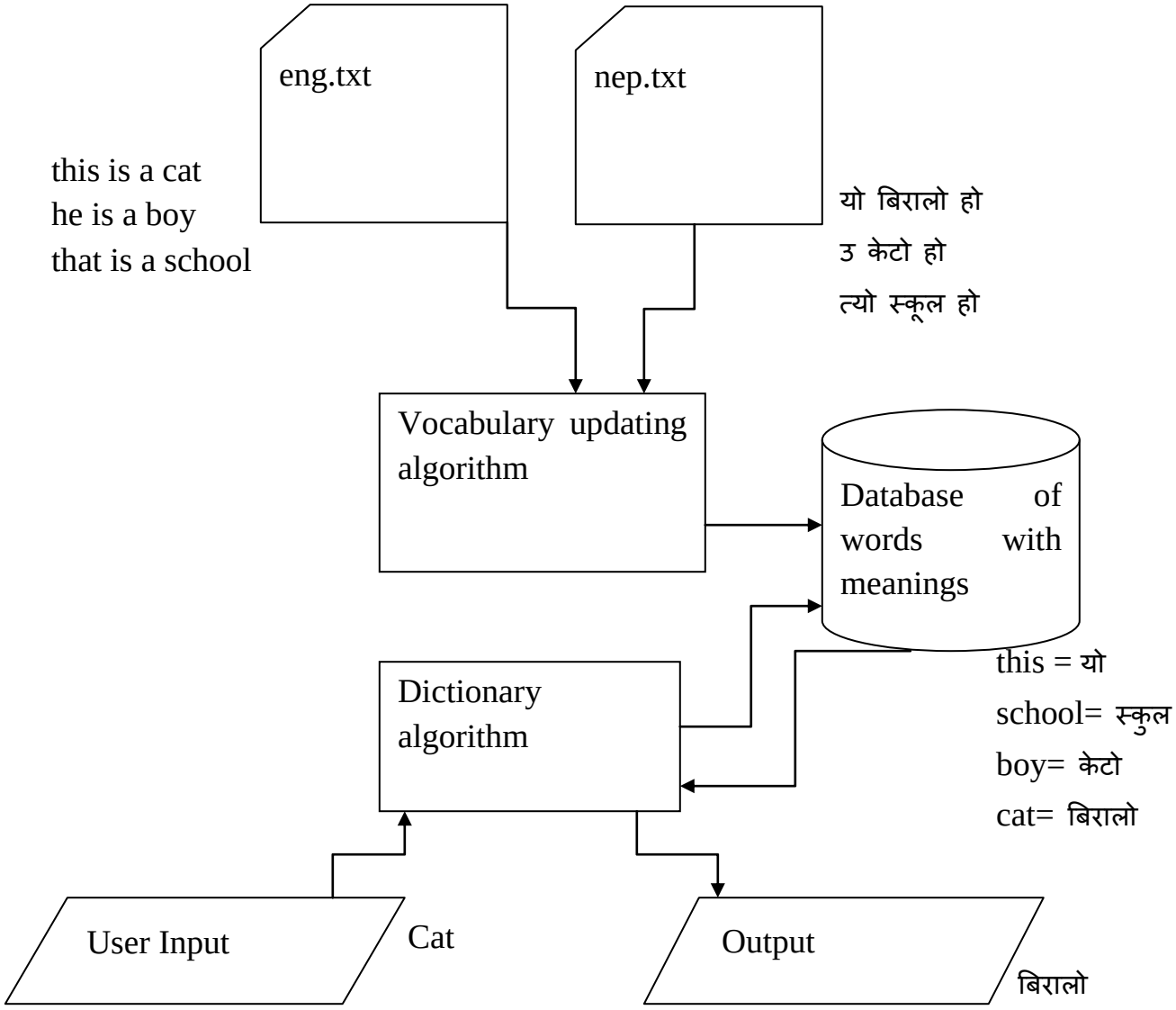


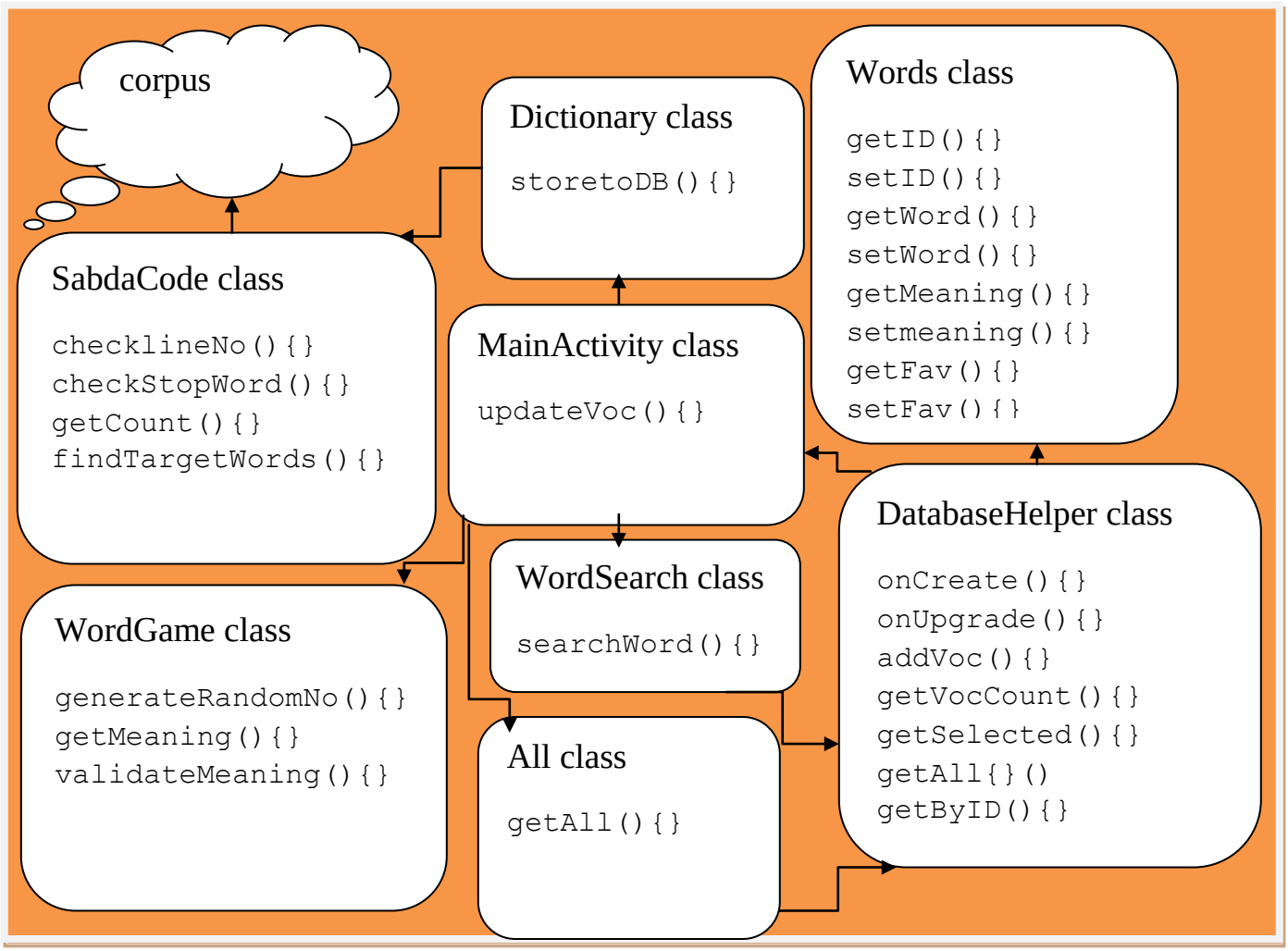
fig.1 *System architecture of "Learning Dictionary"*

The above diagram is the system architecture of our application "Learning Dictionary". The application will have two files i.e. Nep.txt and Eng.txt in the internet server like google drive. The application contains update vocabulary method. The method will parse the .txt files and retrieve the resultant words and store them in the database of the user device. The user then

searches the required word from the given UI and retrieves the meaning of the searched word from the database of his/ her device's UI.

3.2 Class Diagram

Our application "Learning Dictionary" is based on android plateform. It uses Java as the programming language for the activities of the application. Such activities are coded as java classes. The application also contains other helper class for defining the SQlite database and for other purposes. The arrangement of all the classes can be diagramatically presented as the below class diagram.



CHAPTER 4
PROGRAMMING ENVIRONMENT

4.1 Introduction

A mobile operating system, also called a mobile OS, is an operating system that is specifically designed to run on mobile devices such as mobile phones, smartphones, PDAs, tablet computers and other handheld devices. The mobile operating system is the software platform on top of which other programs, called application programs, can run on mobile devices.Commonly use operating system use in smartphones are IOS, Windows Phone OS and Android.

4.1.1 IOS

It is a mobile operating system developed and distributed by Apple Inc. Originally released in 2007 for the iPhone.It has been extended to support other Apple devices such as the iPod Touch, iPad Mini, and second-generation Apple TV Unlike Microsoft's Windows Phone and Google's Android, Apple does not license iOS for installation on non-Apple hardware. As of October 2013, Apple's App Store contained more than 1 million iOS applications. Apple update and test various version of IOS for iPhone, they focus on different types of mobile application for iPhone user. Latest version of IOS is 7.0.4 released on November 14, 2013.

4.1.2 Windows Phone OS

Windows Phone is a series of smartphone operating systems developed by Microsoft. Unlike Windows Mobile, Windows Phone 7 (also referred to as WinPho7) is targeted more to the consumer market than the enterprise market, and it replaces the more traditional Microsoft Windows OS. The latest release is Windows Phone 8, which was launched on October 29, 2012. With Windows Phone, Microsoft created a new user interface.

4.1.3 Android

Android is a Linux-based operating system designed primarily for touchscreen mobile devices such as smartphones and tablet computers. It was initially developed by Android, Inc, which Google backed financially and later bought in 2005. Android is open source, This open-source code and permissive licensing allows the software to be freely modified and distributed by device manufacturers, Android has recently introduce Android 4.4 kitkat.

4.2 Android

Android is a Linux-based operating system designed primarily for touchscreen mobile devices such as smartphones and tablet computers. Initially developed by Android, Inc. Which Google backed financially and later bought in 2005 . Android is open source, This open-source code and permissive licensing allows the software to be freely modified and distributed by device manufacturers. Android has a large community of developers writing applications ("apps") that extend the functionality of devices, written primarily in the Java programming language. In October 2012, there were approximately 700,000 apps available for Android, and the estimated number of applications downloaded from Google Play, Android's primary app store, was 25 billion. A developer survey conducted in April–May 2013 found that Android is the most popular platform for developers, used by 71% of the mobile developer population. Android provided various version of OS for mobile application user they are following

4.2.1 Versions of Android OS

4.2.1.1 Android 1.5 – Cupcake

Cupcake was the first major overhaul of the Android OS. The Android 1.5 SDK was released in April 2009 and brought along plenty of UI changes, the biggest probably being support for widgets and folders on the homescreens.

There were plenty of changes behind the scenes, too. Cupcake brought features like improved Bluetooth support, camcorder functions, and new upload services like YouTube and Picasa.

Android 1.5 ushered in the era of the modern Android phone, and the explosion of devices included favorites like the HTC Hero/Eris, theSamsung Moment, and the Motorola Cliq.

4.2.1.2 Android 1.6 Donnut

Donut, released in September 2009, built on the features that came with Android 1.5, and expanded them. While not very rich in the eye-candy department, Android 1.6 made some major improvements behind the scenes, and provided the framework base for the amazing features to come. To the end user, the two biggest changes would have to be the improvements to the Android Market, and universal search.

Behind the screen, Donut brought support for higher resolution touchscreens, much improved camera and gallery support, and perhaps most importantly, native support for Sprint and Verizon phones. Without the technology in Android 1.6, there would be no Motorola Droid X or HTC Evo 4G.

The devices released with Android 1.6 cover a wide range of taste and features, including the Motorola Devour, the Garminphone, and the Sony Ericsson Xperia X10.

4.2.1.3 Android 2.0/2.01/2.1 - Eclair

Eclair was a pretty major step up over its predecessors. Introduced in late 2009, Android 2.0 first appeared on the Motorola Droid, bringing improvements in the browser, Google Maps, and a new user interface. Google Maps Navigation also was born in Android 2.0, quickly bringing the platform on par with other stand-along GPS navigation systems.

Android 2.0 quickly gave way to 2.0.1, which the Droid received in December 2009, mainly bringing bugfixes. And to date, the Droid remains the phone phone to have explicitly received Android 2.0.1.

The now-defunct Google Nexus One was the first device to receive Android 2.1 when it launched in January 2010, bringing a souped-up UI with cool 3D-style graphics. From there, the rollout of Android 2.1 has been relatively slow and painful. Manufacturers skipped Android 2.0 in favor of the latest version but needed time to tweak their customizations, such as Motorola's Motoblur.

HTC's Desire and Legend phones launched with Android 2.1 later in the year, touting a new and improved Sense user interface.

4.2.1.4 Android 2.2 - Froyo

Android 2.2 was announced in May 2010 at the Google IO conference in San Francisco. The single largest change was the introduction of the Just-In-Time Compiler -- or JIT -- whichsignificantly speeds up the phone's processing power.

Along with the JIT, Android 2.2 also brings support for Adobe Flash 10.1. That means you can play your favorite Flash-based games in Android's web browser. Take that, iPhone!

Froyo also brought native support for tethering, meaning you could use your Android smartphone's data connection to provide Internet (wirelessly or with a USB cable) to just about any device you want. Sadly, most carriers will strip this native support in exchange for some sort of feature they can charge for. (Can't really blame them, can you?)

4.2.1.5 Android 2.3 GingerBread

Android 2.3 came out of the oven in December 2010, and like Eclair, has a new "Googlephone" to go along with -- the Nexus S. Gingerbread brings a few UI enhancements to Android, things like a more consistent feel across menus and dialogs, and a new black notification bar, but still looks and feels like the Android we're used to, with the addition of a slew of new language support.

Gingerbread brings support for new technology as well. NFC (Near Field Communication) is now supported, and SIP (Internet calling) support is now native on Android. Further optimizations for better battery life round out a nice upgrade.

Behind the scenes, the fellows at Mountain View spent time with more JIT (the Just-In-Time compiler) optimizations, and made great improvements to Androids garbage collection, which should stop any stuttering and improve UI smoothness. Round that out with new a multi-media framework for better support of sound and video files.

4.2.1.6 Android 3.X - Honeycomb

Android 3.0 came out in February 2011 with the Motorola Xoom. It's the first version of Android specifically made for tablets, and brings a lot of new UI elements to the tablet. Things like a new System bar at the bottom of the screen to replace the Status bar we see on phones, and a new recent applications button are a great addition for the screen real estate offered by Android tablets.

Some of the standard Google applications have also been updated for use with Honeycomb, including the Gmail app and the Talk app. Both make great use of fragments, and the Talk app has video chat and calling support built in. Under the hood, 3D rendering and hardware acceleration have been greatly improved.

We can't talk about Honeycomb without mentioning that it also shows Google's new distribution method, where manufacturers are given the source code and license to use it only after their hardware choices have been approved by Google. This dampens third party development, as the source code is no longer available for all to download and build, but Google assures us they will address this issue in the future.

Improvements to Honeycomb were announced at Google IO in May 2011 as Android 3.1, and Android 3.2 has followed.

4.2.1.7 Android 4.0 - Ice Cream Sandwich

The follow-up to Honeycomb was announced at Google IO in May 2011 and released in December 2011. Dubbed Ice Cream Sandwich and finally designated Android 4.0, Ice Cream Sandwich brings many of the design elements of Honeycomb to smartphones, while refining the Honeycomb experience.

The first device to launch with ICS was the Samsung Galaxy Nexus. The Motorola Xoom and the ASUS Transformer Prime were the first tablets to receive updates, while the Samsung Nexus S was the first smartphone to make the jump to Android 4.0.

4.2.1.8 Android 4.1-4.3 - Jelly Bean

Jelly Bean arrived at Google IO 2012, with the release of theASUS Nexus 7, followed by a quick update for unlocked Galaxy Nexus phones. Later in the year, the release of the Nexus 10 andNexus 4 updated things

from 4.1 to 4.2 and on to 4.3, but the version remained Jelly Bean. The release polished the UI designstarted in Ice Cream Sandwich, and brought several great new features to the table.

Besides the new focus on responsiveness with Project Butter, Jelly Bean brings multi-user accounts, actionable notifications, lock screen widgets, quick-settings in the notification bar, Photosphere to the "stock" Android camera and Google Now.

Jelly Bean is hailed by many as the turning point for Android, where all the great services and customization options finally meet great design guidelines. It's certainly very visually pleasing, and we'd argue that it's become one of the nicest looking mobile operating systems available.

4.2.1.9 Android 4.4 - KitKat

Google announced that the next version of Android would be named for their favorite confectioneries — Kit Kat bars — on September 3, 2013. We're not yet sure what manner of goodies we'll find in the next version of Andorid, because Google has been understandably cryptic with details.

Their US partner in the deal, Hershy, hasn't been so quiet. They promise an update that really does taste as good as it looks, and offers adjustable orientation that works perfectly in portrait or landscape. If you enjoy a little tongue-in-cheek humor, have a look here and speculate with everyone else.

4.3 Programming in android

Programming in information technology means making a device (may be a computer or anything else) follow your instruction. In todays practice, the work of making a device follow our command is generally done by building applications or operating systems that run on the devices. Developing an operating system is considered to be a difficult task and is done by some companies like Microsft, Apple and Google. So what we mean here is developing an application on the OS developed by those companies is known as programming or developing also called app development. Though there are a lot of plateforms to work on, we have choosen android development in this project because we are gaining knowledge on exciting use of XML and java language in hand held device programming. Here we want to mention a little on various components in android programming.

While developing an application in android plateform, we need to be fimiliar with some terminologies. These terms are used in another plateforms of programming as well which are;

SDK (Software Development Kit): It is the basic set of tools that allows the creation of application for a certain package, software framework or hardware platerform, computer systems or any other such development packages. This is a general development tool for all the developing plateform. In case of android application development we use ADT (Android Development Tool) which is specified for generating apps in android plateform including debug mode and release mode works as well. ADT contains the JDK (Java Development Kit) to compile the codes written in Java programming language, An Emulator for debugging and testing the applications developed in Android plateform, An IDE (Integreted Development Environment) to the developers easy to develop the application which contains an XML editor, Source code (java) editor and other facalities. The popular IDEs in Android Development are Eclipse with ADT and Android Studio. The ADT also contains the API Level (Application Programming Interface Level) to work and support the changes in the android operating system itself. The API level goes on increasing with

the release of new version in android operating system. The current API level for Android 4.4 KitKat is 19. These are all the basic set of tools used in android application development. After a developer is provided with these all tools, then to develop an application following strategies are adopted.

4.3.1 Java as Activity

Java is an object-oriented language similar to C++, but simplified to eliminate language features that cause common programming errors. Java source code files (files with a .java extension) are compiled into a format called bytecode (files with a .class extension), which can then be executed by a Javain terpreter. Compiled Java code can run on most computers because Java interpreters and runtime environments, known as Java Virtual Machines (VMs), exist for most operating systems, including UNIX, the Macintosh OS, and Windows. Bytecode can also be converted directly into machine languageinstructions by a just-in-time compiler (JIT). in android java is use for main activity class . Activity is an application component that provides a screen with which users can interact in order to do something, such as dial the phone, take a photo, send an email, or view a map. Each activity is given a window in which to draw its user interface. The window typically fills the screen, but may be smaller than the screen and float on top of other windows. An application usually consists of multiple activities that are loosely bound to each other. Typically, one activity in an application is specified as the "main" activity, which is presented to the user when launching the application for the first time. Each activity can then start another activity in order to perform different actions. Each time a new activity starts, the previous activity is stopped, but the system preserves the activity in a stack (the "back stack"). When a new activity starts, it is pushed onto the back stack and takes user focus. The back stack abides to the basic "last in, first out" stack mechanism, so, when the user is done with the current activity and presses theBack button, it is popped from the stack (and destroyed) and the previous activity resumes. Example of

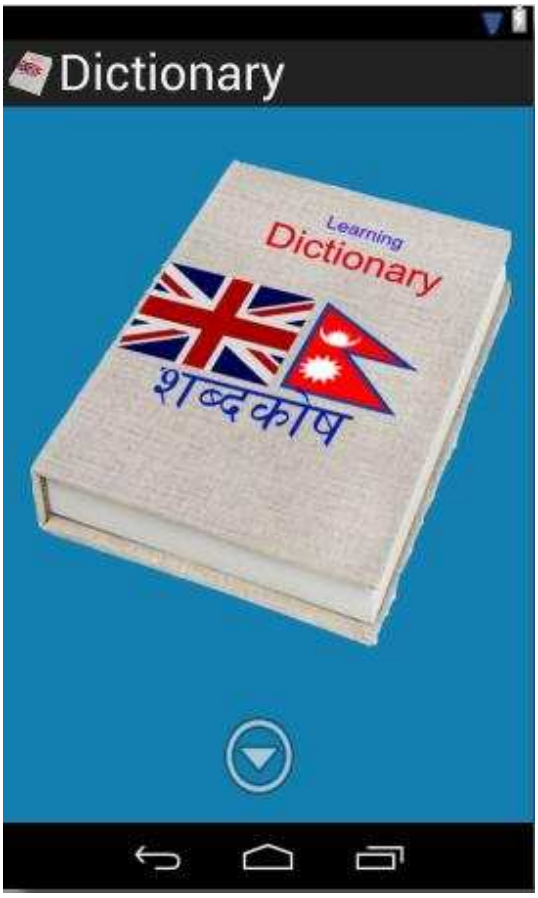
```
public class MainActivity extends Activity {
    EditText inpWt, inpHt,result;
    TextView wtLbl, htLbl;
    Button calculate;

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        inpWt=(EditText) findViewById(R.id.weightInput);
    `
```

4.3.2 Extensible Markup Language (XML) is a markup language. XML was designed to transport and store data. XML was designed to carry data, not to display data, but incase of android programming XML is use as various components of the applcation like screen, string and other resources. Let us see a brief description of uses of XML on android development.

4.3.2.1 XML as screen

For every application, there may be a single or multiple screens depending upon the application. In programming and designing of the android applications, they are basically called as layout. XML is used in android programming to create the screens of the application. Whatever the use sees on the screen is all the work of XML. Here is listed an example of XML code creating a screen with the picture.



The above screen in android application is generated by the XML code listed below.

```
<AbsoluteLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    android:paddingBottom="@dimen/activity_vertical_margin"
    tools:context=".MainActivity"
    android:background="#137eb0"
    android:columnCount="3"
    android:rowCount="3"
        >

    <ImageView
            android:layout_width="fill_parent"
            android:layout_height="392dp"
            android:id="@+id/imageView"
            android:layout_x="4dp"
            android:layout_y="16dp"
            android:src="@drawable/icon2"/>

    <ImageButton
            android:layout_width="69dp"
            android:layout_height="77dp"
            android:id="@+id/first"
            android:layout_x="135dp"
            android:layout_y="416dp"
            android:background="@android:drawable/ic_menu_more"/>

    <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="New Text"
            android:id="@+id/textView"
            android:layout_x="540dp"
            android:layout_y="106dp"/>

</AbsoluteLayout>
```

List illustration of XML as screen of android device.

4.3.2.2 XML as Menu:

Menu in android programing is used for user interface. That is to provide the extra information in the application like updating and information about the application and others. In android programming XML is used in android Menu creation also. There are generally two types of menus in android. They are Options Menu and Context menu.

Options menu are generally created in the action bar of the application and is retrieved by pressing the menu button the devices with the button. Else by clicking on the menu in the devices with Menu button.If the device do not have it by tapping on the action bars menu. Let us see an example of the menu used in the android programming.

```
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android">
    <item android:id="@+id/abt" android:title="About" >
        <!-- "about" submenu -->
        <menu>
            <item android:title="Application" android:id="@+id/abtapp"></item>
            <item android:title="Developers" android:id="@+id/abtdev"></item>
        </menu>

    </item>
    <item android:id="@+id/upd" android:title="Update">

        <menu>
            <item android:id="@+id/app" android:title="Application"> </item>
            <item android:id="@+id/voc" android:title="Vocabulary"> </item>
        </menu>


    </item>
    <item android:id="@+id/mainext" android:title="Exit"/>
</menu>
```

The menus created in that way are generally shown in the application using the Menu inflator method in the java class of the android activity where we want to show the menu in the application.

4.3.2.3 XML as String

A string resource in android programming is used to fill a text box, text view or anything another related to the string variable during the programming. Such resources can be used to name the entire application also.

```
<?xml version="1.0" encoding="utf-8"?>
<resources>

    <string name="app_name">Curency converter</string>
    <string name="hello_world">Hello world!</string>
    <string name="menu_settings">Settings</string>
       <string-array name="itemofdol" >
      <item >Indian</item>
   <item>USD</item>
```

```
<item>Euro</item>

      <item>paund</item>
```

4.2 IDE of android

IDE is a programming environment integrated into a software application that provides a GUI builder, a text or code editor, a compiler and/or interpreter and a debugger. Some IDEs contain a compiler, interpreter, or both, such as Eclipse. One aim of the IDE is to reduce the configuration necessary to piece together multiple development utilities, instead providing the same set of capabilities as a cohesive unit. Reducing that setup time can increase developer productivity, in cases where learning to use the IDE is faster than manually integrating all of the individual tools. . Tighter integration of all development tasks has the potential to improve overall productivity beyond just helping with setup tasks. For example, code can be continuously parsed while it is being edited, providing instant feedback when syntax errors are introduced. That can speed learning a new programming language and its associated libraries. Mainly two Types of IDE used in android

1.Eclipse

2.Android studio

1.Eclipse

In computer programming, Eclipse is an Integrated development environment (IDE) comprising a base workspace and an extensible plug-insystem for customizing the environment. It is written mostly in Java. It can be used to develop applications in Java and, by means of various plug-ins, other programming languages. It can also be used to develop packages for the softwareMathematica. Development environments include the Eclipse Java development tools (JDT) for Java and Scala, Eclipse CDT for C/C++ and Eclipse PDT for PHP, android program. Eclipse began as an IBM Canada project. Object Technology International (OTI). Eclipse 3.0 (released on 21 June 2004) selected the OSGi Service Platform specifications as the runtime architecture. The Association for Computing Machinery recognized Eclipse with the 2011 ACM Software Systems Award on 26 April 2012.

1. Android Studio

Android Studio is an integrated development environment (IDE) for the Android platform. It was announced on 16 May 2013 by Google's Product Manager, Ellie Powers, at that year's Google I/O conference. As of June 2013, it is available for users to try (for free) as an early access preview. Based on JetBrains' popular IntelliJ IDEA software, the Studio is designed specifically for Android development. It is available for download on Windows, Mac OS X and Linux.

CHAPTER 5
DICTIONARY AS OOP

OOP (Object oriented programming) is the programming concept where all the real world objects are represented in the programming. In OOP, the activities that are performed by the objects are called as methods and the components are known as the object. A unit of the system consisting the objects and methods are represented by the class in OOP. Let us here convert our learning dictionary app as the OOPs

In our application it has the following functional units are used

5.1 Classes:

Since our application was developed using the android plateform and it uses java programming language for the back end we need java classes to work with it. So we have used the following java classes to make our dictionary functionable

5.1.1 MainActivity: This is the java class where the user first enters when the application is started in his/ her device. This class has the calling of other classes through the buttons' action event and redirect the app users to ther class.

5.1.2 SabdaCode: This is the class used in the application which donot directly involve in the front part operations. Factly saying that, the user of this application will be conpletely not viewing this class. This class contains all the methods required for the dictionay like checkStopWords, findTargetWords and others.

5.1.3 WordSearchClass: This java calls the layout "word_search.xml" which contains a search box, a textView and buttons. When the user gets into this class, he/she will be greeted with the word_search screen. The user types the required word in the search box and gets the meaning of the word.

5.1.4 WordGameClass: This java class calls the word_game.xml layout in which there is a textView, EditText, a timer and a submit button. The class is used for playing the word game by the user and is entered from the MainActivity. Here a random number generating algorithm is implemented an the meaning that corresponds to the generated random number is displayed in the textView and the user have to enter the word for the meaning in the specified time in the timer.

5.1.5 DatabaseHelperClass: This java class is the unseen class. It is not generally visible to the user of the application. The main fuction of this java class is to create a database in the device memory and insert the data from the corpus. The ceated database contains a table with three fields Id, Word and meaning. The corpus is parsed from the parsing algorithm and the words and meanings retrieved are stored accordingly in the table. The stored values are then used in WordSearch and Wordgame according to the algorithms and function in those classes.

5.1.6 WordsClass: This class in the application is used to set getter and setter in the database of the application. This class simply sets the values from the database to the desired variable and gets the set values when the user calls the get function of the class from the DatbaseHandler class.

5.2 Screens (Layouts)

In android programing, we need to present all the things to the device screen. So we have to design the screen for each activity. Here in this type of programming here is an exctiting use of xml for creating the screen rather that using the java's GUI like JFrame or JPanel.

5.2.1 activity_main: this is the first screen or also can be called as the "home" screen of this application. When the user selects the icon of "Learning Dictionary" is his or her device's application list window then he/she is greeted with this screen. The screen contains an image of learning dictionary icon and a button. Which when pressed or selected gives a dialog box to choose on which other layout you want to go.

5.2.2 word_search: this is the most important screen for the application because it is the screen where the user seaches the words for meanings. This screen contains a search box and two buttons of favourites and recent words. The user types the word in the search box and get the meaning in Nepali in the text view. Similarly the user can get access to the recent words and can keep "favourites" for efficient future searching of the words.

5.2.3 word_game: This layout is for playing the word game and is handled by Word_game java class. Here it contains two textviews, a text Field and a button. in the top textview a meaning from the dictionary is displayed and user type word for that and click the submit button. The score is shown in the next textview.

5.2.4 Other layouts: Apart from these basic layouts, other layouts are also used in the application like about application dialog, decision dialog in the home screen. Similarly "about game" is also another layout in which the description about the game is mentioned.

5.3 Methods (functions)

To make our application "Learning Dictionary" functionable we have used the following functions coded in java programming language.

5.3.1 updateDictionary(): this fuction is called when the user go to menu-> update-> vocabulary from the home screen of the application. This function downloads the corpuses from online and parses the words in keep in the database of the private device. This is a rarely used fuction and only used when the developer uploads a new corpuses in the server.

5.3.2 checkStopWords(): this function checks the stopwords present in the corpus in skips if found. Stop words are such words which are frequently used in the text and are less useful like is, am, are, a, an etc. Such words are discarded from our dictionary application by this function.

5.3.3 findTargetWord(): this function finds the target word in the Nepali corpus from the English corpus and returns both sourceWord and targetWord.

5.3.4 checkLineNo(): this function checks the line no of the senteces and passes the lineNo to the findTargerWord() function to search the targetWords in corresponding line.

5.3.5 generateRandomNumber: This is the method implemented in java in our application to generate a random number from the range of ID used in the dictionary's database. This fuction returns an integer and is used in playing the word game of this application. In the word game layout when the user selects the "New Game" option, then this algorithm generates a random number and a corresponding meaning of the number is shown in the UI for which user type the meaning in the limited time to score points.

CHAPTER 6
FUTURE ENHANCEMENTS

6.1 Image input

Image as input to the database of dictionary is another area of scope of enhancement of dictionary. But this process is very complex and the reliability of the correct output is very less. In the world of technology every handheld device like android smartphone contains camera built in it. The images taken from the camera can be used as the input to dictionary database, but it takes a huge amount of database. Since we can access the large amount of databases from online, we can use image input as the future enhancement of dictionary.

Similarly, the output of the search result can also be displayed in image to make the word search clearer, informative and user-friendly.for eg: if the search is for an apple, we can display the image of apple along with the meaning of apple in Nepali.

It would be beneficial for all age group from child to elders, for beginners etc.

6.2 Language extensibility

In information technology, extensible describes something, such as a program, programming language, or protocol, which is designed so that users or developers can expand or add to its capabilities.

Language extensibility in our context is the use of communication language like English, Nepali, Hindi, Newari etc. as the language to be used for the meaning conversion in dictionary.

English is a universal language. English is the primary communication language used all over the world. Currently we are working on English to Nepali conversion, and after this we are planning for reverse conversion (i.e. Nepali to English conversion).afterward that our aim is to extend in other languages as well.

6.3 Parts of speech recognition

Currently our application “Learning Dictionary” cannot display under which category the searched words belong to. That is it can not distinguish whether the word entered for search is a noun, pronoun or anything else. So for the enhancement of this application, we will be adding that feature

in this application as well. So a user will be able to use both grammar and dictionary feature in a single application.

6.4 Sentence translation

Since this application comes under the language and AI project, we too want to include sentence translation feature in this application in the near future. This feature will surely be exiciting to the user that they can directly translate sentences from one language to another.

CONCLUSION

The aim of this project is develop for the user who wants to know meaning of Nepali and English words on user's handle device and also interaction with this aplication and entertainment by game. This aplication can be use easily by install .apk files in android supported device with optimized screen.

With the completion of this project, we become familiar with HTTP request .We are collect knowledge form different resources for making corpus and additional knowledge about database handle in mobile device.

Finally, we express our profound pleasure to bring the" Learning dictionary" to you all

REFERANCES

Following are the sites and books we refer during the development of the project.

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2. www.wikipidea.com
3. www.stackoverflow.com
4. www.apple.com
5. www.microsoft.com
6. www.android.com
7. www.oracle.com
8. www.androidhive.info
9. www.androidcompare.com
10. www.tutorialpoints.com

1. professional android development 4
2. Complete Java certification 2
3. Using java 2
4. Corpus-based versus intuition-based lexicography:
5. defining a word list for a French learners' dictionary
   (a Paper on corpus based dictionaries vs general dictionaries)
6. Artificial Intelligence A modern Approach 2nd edition by Stuart Russel and Peter Norvig

APPENDIX

Screenshots

fig 3. the first screen of learning dictionary

fig 4. Word search screen

fig 5. Word game screen