VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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A MINI PROJECT REPORT
ON

"BINARY TO DECIMAL NUMBER CONVERTER APPLICATION"

Submitted in the partial fulfilment of Sixth Semester Mini Project Work

BACHELOR OF ENGINEERING
IN
COMPUTER SCIENCE AND ENGINEERING

By

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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M S ENGINEERING COLLEGE
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CERTIFICATE

This is to certify that the mini project work entitled **"BINARY TO DECIMAL NUMBER CONVERTER"** carried out by **HARI CHARAN K (1ME19CS037)** and **ZIAUDDIN SYED (1ME18CS084)** is a bonafide student of **M S ENGINEERING COLLEGE** submitted in partial fulfillment for the award of Bachelor of Engineering in Computer Science and Engineering of Visvesvaraya TechnologicalUniversity, Belagavi, during the year **2021-2022**. It is certified that all corrections/suggestions indicated for internal assessment have been incorporated in the report, deposited in the department library. This mini project work report has been approved as it satisfies the academic requirements in respect of mini project work prescribed for **Bachelor of Engineering** Degree.

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Signature of Guide **Signature of HOD**

Internal Examiner	**Name** ----------	**Signature** ----------
External Examiner	**Name** ----------	**Signature** ----------

DATE:……..

ACKNOWLEDGEMENT

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ABSTRACT

Bits represent one of two values, 0 or 1, and are joined together to form *binary numbers*. Each column of a binary number has twice the weight of the previous column, so binary numbers are *base 2*. In binary, the column weights (again, from right to left) are 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048, 4096, 8192, 16384, 32768, 65536, and so on. If you work with binary numbers often, you'll save time if you remember these powers of two up to 2^{16}.

An *N*-bit binary number represents one of 2^N possibilities: 0, 1, 2, 3, …, $2^N - 1$. Table 1.1 shows 1-, 2-, 3-, and 4-bit binary numbers and their decimal equivalents.

We generally use the base10 (also known as *decimal*) numbering system, which uses 10 values (0, 1, 2, 3, 4, 5, 6, 7, 8, 9) to represent numbers.

Computers use the base2 (also known as *binary*) numbering system to represent data. The binary numbering system uses two values, 0 and 1, to represent numbers. This is because a computer only recognizes two states: the presence or absence of an electrical charge. Even if a computer is showing you decimal numbers, it is merely a translation of the binary numbers inside the machine.

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION TO PROJECT

Most of the computers can understand the binary numbers where humans can't understand them y the use of this project we can easily convert the large binary numbers to the Decimal numbers where everyone can understand them easily. In commercial business and internet based applications, decimal arithmetic is receiving significant importance. Decimal arithmetic is important in many applications such as banking, tax calculation, insurance, accounting and many more. Even though binary arithmetic is used widely, decimal computation is essential. The decimal arithmetic is not only required when numbers are presented for inspection by humans, but also it is a necessity when fractions are being used. Rational numbers whose denominator is a power of ten are decimal fractions and most them cannot be represented by binary fractions. For example, the value 0.01 may require an infinitely recurring binary number. Even though the arithmetic is correct, but if binary approximation is used instead of an exact decimal fraction, results can be wrong.

1.2 SCOPE

This extensive use of decimal data indicates that it is important to analyse how the data can be used and how the decimal arithmetic can be defined. However, the current general purpose computers perform decimal computations using binary arithmetic. But the problem is that decimal numbers such as 0.3 cannot be represented precisely in binary. The errors that result on conversion between decimal and binary formats cannot be tolerated as long as precision is concerned.

By the use of this application we can easily convert the Binary numbers to Decimal numbers.

CHAPTER 2

REQUIREMENTS AND SPECIFICATION

2.1 SYSTEM REQUIREMENTS:

2.1.1 Software Requirements:

- Operating System – Windows.
- Memory-8GB RAM
- Free storage-8GB
- Screen resolution-1280 x 800

2.1.2 Hardware Requirements:

- Processor – At least 2.0 GHZ
- RAM – 8GB or more

2.2 TOOLS AND TECHNOLOGIES USED:

2.2.1 Android Studio:

Android Studio [6] is exclusively designed for developing Android applications. It consists of all Android SDK tools to design, develop, maintain, test, debug and publish our app.

2.2.2 Android Software Development Kit(SDK):

One of the main tools used in developing android applications, as it packages many core features into one SDK and it can be used in the application easily. This helps us to avoid writing lot of code, and building applications faster.

2.2.3 Android Debug Bridge (ADB);

Android SDK uses ADB tool as a connection device which allows us to connect the Android Devices or Emulator with the machine via USB. After developing or while developing applications, we can connectwith the device to check how the application runs. Later, we can debug and run the applications.

PROJECT DEVELOP LANGUAGES:

There are two kinds of languages have used in "Student Information System". One is a Programming Language and other is Database Language. Front End, I have used XML & Back End, I have used Java Programming Language in my "Student Information System"

- **Programming Language & Markup Language:**
- **JAVA:**
    - Java is a high-level, class-based, object-oriented programming language that is designed to have as few implementation dependencies as possible**.**
- **XML:**
    - XML stands for extensible markup language. A markup language is a set of codes, or tags, that describes the text in a digital document. The most famous markup language is hypertext markup language (HTML), which is used to format Web pages.
- **SQLite Database:**
    - It is a local or in built android database.
    - Similar to Microsoft Access Database.
    - All components are contained within one file.
    - Embedded Relative Database.
    - No Installation or drivers required.

.

CHAPTER 3

SOURCE CODE

Main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
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"
tools:context=".MainActivity">

<EditText
android:id="@+id/editText"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_marginLeft="8dp"
android:layout_marginTop="200dp"
android:layout_marginRight="8dp"
android:background="@drawable/edit_text_border"
android:digits="01"
android:hint="Enter a Binary Number"
android:inputType="numberDecimal"
android:padding="10dp"
android:textAlignment="center"
android:textSize="20sp" />

<Button
android:id="@+id/submit"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_below="@id/editText"
android:layout_centerHorizontal="true"
android:layout_margin="8dp"
android:text="Submit"
android:textAllCaps="false" />

<EditText
android:id="@+id/output"
android:layout_width="match_parent"
```

```
android:layout_height="wrap_content"
android:layout_below="@id/submit"
android:layout_marginLeft="8dp"
android:layout_marginTop="40dp"
android:layout_marginRight="8dp"
android:background="@drawable/edit_text_border"
android:hint="Answer will appear here"
android:padding="10dp"
android:textAlignment="center"
android:textSize="20sp" />

<Button
android:id="@+id/reset"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_below="@id/output"
android:layout_centerHorizontal="true"
android:layout_margin="8dp"
android:text="Reset"
android:textAllCaps="false" />

<TextView
android:id="@+id/textView"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_below="@id/reset"
android:layout_marginLeft="10dp"
android:layout_marginTop="50dp"
android:text=" Click on Submit Button after entering a Binary Number"
android:textSize="15dp" />

<TextView
android:id="@+id/textView3"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_below="@id/textView"
android:layout_marginLeft="10dp"
android:layout_marginTop="10dp"
android:text=" Click on Reset Button to reset"
android:textSize="15dp" />

</RelativeLayout>
```

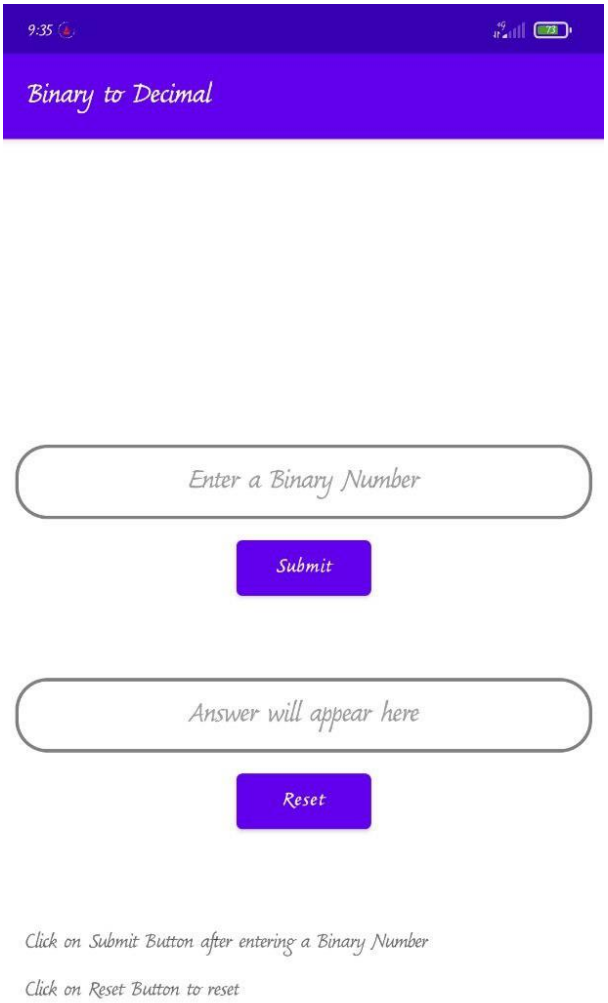
JAVA CODE

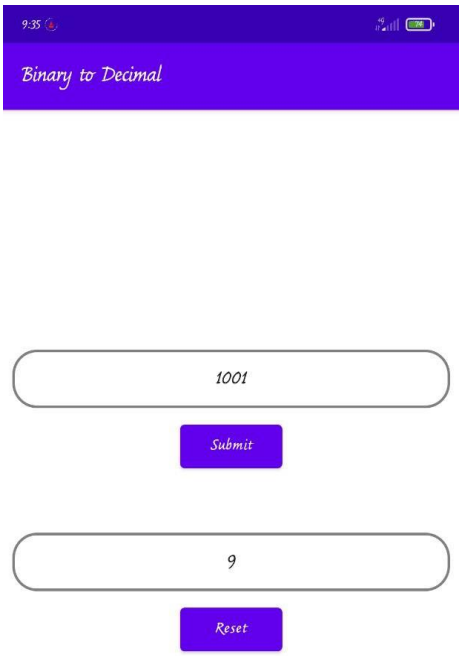
```
package com.example.binarytodecimal;

import android.os.Bundle;
import android.view.View;
import android.widget.EditText;
import android.widget.Button;

import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        // Giving name to the variables for two EditTexts and two Buttons
        // input is where the user will input the decimal number
        // output is where the user will get the output in the form of binary number
        // submit is the button created to submit the decimal number entered by the user
        // clear is the button to clear the answer
        EditText input, output;
        Button submit, reset;

        // Calling the EditText by id which we gave in xml file
        input = (EditText) findViewById(R.id.editText);
        output = (EditText) findViewById(R.id.output);

        submit = (Button) findViewById(R.id.submit);

        // It is set so that when the user clicks on submit button, the data
        // gets send in the function created below which will convert it and then
        // show the answer to the user in the output

        submit.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {

                // Creating a string method argument
                String string = input.getText().toString();
```

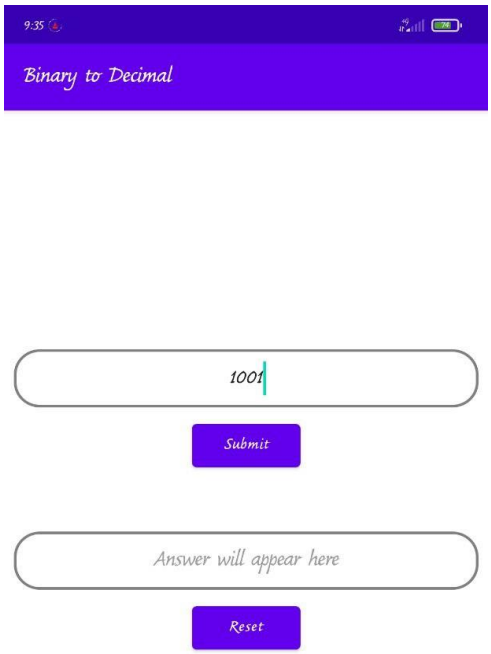
```
            // Here, we are parsing a string method
            // argument into an integer object
            int i = Integer.parseInt(string, 2);

            // Converts and stores it in the form of string
            String decimal = Integer.toString(i);

            // It will show the output in the second edit text that we created
            output.setText(decimal);
        }
    });

    // Here, we will define a function which will
    // clear the whole text and reset it
    reset = (Button) findViewById(R.id.reset);
    reset.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            input.setText("");
            output.setText("");
        }
    });

}
```

CHAPTER 4

SCREENSHOTS




9:35
Binary to Decimal
1001
Submit
9
Reset
Click on Submit Button after entering a Binary Number
Click on Reset Button to reset


9:35
Binary to Decimal
1001
Submit
Answer will appear here
Reset
Click on Submit Button after entering a Binary Number
Click on Reset Button to reset

CHAPTER 5

CONCULSION

Implementing this application is very simple and useful to most of the people in the society. We hope that Binary to Decimal number converter stimulates others to pursue this goal.

Decimal data processing applications have grown exponentially in recent years thereby increasing the need to have hardware support for decimal arithmetic. Binary to BCD conversion forms the basic building block of decimal digit multipliers.

This in turn can be overcome by using a decimal Arithmetic and logic unit. The operations related to decimal arithmetic are typically slower, more complex and occupy more area and this leads to more power and less speed when implemented in hardware

This Application can be downloaded at:

https://github.com/vinny2503/Binary-to-Decimal-Converter.git where users can install and use the Application for simple binary to decimal conversions.

CHAPTER 6

BIBLIOGRAPHY

www.geeksforgeeks.org

www.javatpoint.com

www.Simplelearn.org

www.github.com