# VISVESWARAYA TECHNOLOGICAL UNIVERSITY

# BELAGAVI-590018

*Mini Project Report on*

*"BMI Calculator"*

*Submitted in partial fulfillment of the requirements for the VI semester*

*Bachelor of Engineering in Computer Science*

*of Visveswaraya Technological University, Belagavi*

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## CERTIFICATE

Certified that the mini project work entitled **"BMI Calculator"**has been successfully carried out by **"Nitish k** bearing USN **"1RN19CS092"** and **"Rajatha Bangera"** bearing USN **"1RN20CS411"**, bonafide students of **"RNS Institute of Technology"** in partial fulfillment of the requirements for the 6th semester of **"Bachelor of Engineering in Computer Science and Engineering of Vishveshwaraya Technological University"**, Belagavi, during academic year 2021-2022. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the Mobile Application Development Laboratory requirements.

| | | |
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# Abstract

Body mass index (BMI) is a person's weight in kilograms divided by the square of height in meters. BMI is an inexpensive and easy screening method for weight category—underweight, healthy weight, overweight, and obesity.BMI is interpreted differently for children and teens, even though it is calculated using the same formula as adult BMI. Children and teen's BMI need to be age because the amount of body fat changes with age and the amount of body fat differs between girls and boys.Because calculation requires only height and weight, BMI is an inexpensive and easy tool. To see the formula based on either kilograms and meters or pounds and inches.BMI is calculated the same way for both adults and children. The calculation is based on the following formulas: weight (kg) / [height (m)]$^2$

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# Chapter 1

# Introduction

## 1.1 About the Project

The BMI Calculator is an easy-to-use online tool to help estimate body fat. It is also good in measuring patients' risk of heart diseases that occur with more body fat. The higher your BMI, the higher your risk of obesity-related disease.

## 1.2 Existing System

According to the study related to health of patients it was found that most of the heart diseases which patients suffer most from are due to cholesterol, fat accumulated in their bodies. Hence an effective application must be designed so as to prevent such health issues in patients. By knowing the weight and height of patient we can determine his body mass index and to accurately determine this bmi we have designed the bmi calculator which can give error free results

### 1.2.1 Limitation of Existing System

Although BMI is a widely used and useful indicator of healthy body weight, it does have its limitations. BMI is only an estimate that cannot take body composition into account. Due to a wide variety of body types as well as distribution of muscle, bone mass, and fat, BMI should be considered along with other measurements rather than being used as the sole method for determining a person's healthy body weight.BMI cannot be fully accurate because it is a measure of excess body weight, rather than excess body fat. BMI is further influenced by factors such as age, gender, ethnicity, muscle mass, and body fat, and activity level, among others.The same factors that limit the efficacy of BMI for adults can also apply to children and adolescents. Additionally, height and level of sexual

maturation can influence BMI and body fat among children. BMI is a better indicator of excess body fat for obese children than it is for overweight children, whose BMI could be a result of increased levels of either fat or fat-free mass. In thin children, the difference in BMI can also be due to fat-free mass.

That being said, BMI is fairly indicative of body fat for 90-95 of the population, and can effectively be used along with other measures to help determine an individual's healthy body weight.

# Chapter 2

# Requirement Analysis

## 2.1 Hardware Requirements

The hardware requirements are very minimal and the program can be run on most of the machines

Processor : Qualcomm Snapdragon processor

Processor Speed : 1.4 GHz

RAM : 2 GB

Storage Space : 10 GB

Display Resolution : 1024*768

I/O Elements : Camera, Speaker, Microphone, GPS

Network : 5 Mbps

## 2.2 Software Requirement

Operating System : Android / iOS

## 2.3 Functional Requirements

### 2.3.1 Major Entities

i Easy Deployment and Hosting

ii Leading Mobile Application Management

iii Reduced errors in calculations

# Chapter 3

# System Design

## 3.1 System Architecture

The project consists of the following parts as shown in figure 3.1

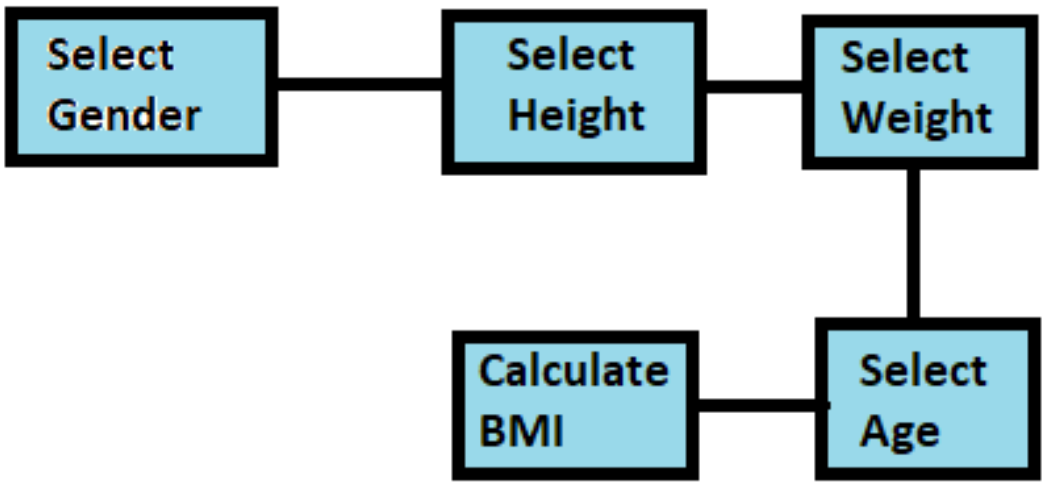



Figure 3.1: BMI Calculation

### 3.1.1 Body Mass Index

Body mass index (BMI) is a person's weight in kilograms divided by the square of height in meters. BMI is an inexpensive and easy screening method for weight category—underweight, healthy weight, overweight, and obesity.BMI does not measure body fat directly, but BMI is moderately correlated with more direct measures of body fat 1,2,3. Furthermore, BMI appears to be as strongly correlated

with various metabolic and disease outcome. BMI can be a screening tool, but it does not diagnose the body fatness or health of an individual. To determine if BMI is a health risk, a healthcare provider performs further assessments. Such assessments include skinfold thickness measurements, evaluations of diet, physical activity, and family history.BMI is interpreted differently for children and teens, even though it is calculated using the same formula as adult BMI. Children and teen's BMI need to be age because the amount of body fat changes with age and the amount of body fat differs between girls and boys.Because calculation requires only height and weight, BMI is an inexpensive and easy tool. To see the formula based on either kilograms and meters or pounds and inches.BMI is calculated the same way for both adults and children. The calculation is based on the following formulas: weight (kg) / [height (m)]$^2$

### 3.1.2 Components

• Linear Layout : LinearLayout is a view group that aligns all children in a single direction,vertically or horizontally. You can specify the layout direction with the android:orientation attribute. Note: For better performance and tooling support, you should instead build your layout with ConstraintLayout.

• Constraint Layout : A ConstraintLayout is a ViewGroup which allows you to position and size widgets in a flexible way. Note: ConstraintLayout is available as a support library that you can use on Android systems starting with API level 9 (Gingerbread). As such, we are planning on enriching its API and capabilities over time.

• Frame Layout : FrameLayout is designed to block out an area on the screen to display a single item. Generally, FrameLayout should be used to hold a single child view, because it can be difficult to organize child views in a way that's scalable to different screen sizes without the children overlapping each other

• Progress Bar : Progress bars are used to show progress of a task. For example, when you are uploading or downloading something from the internet, it is better to show the progress of download/upload to the user. In android there is a class called Progress Dialog that allows you to create progress bar.

• View : View is a basic building block of UI (User Interface) in android. A view is a small rectangular box that responds to user inputs. Eg: EditText, Button, CheckBox, etc.

# Chapter 4

# Implementation Code

## 4.1 MainActivity.java

```
package com.example.bmi_calculator;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.content.ContextCompat;

import android.annotation.SuppressLint;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.ImageView;
import android.widget.RelativeLayout;
import android.widget.SeekBar;
import android.widget.TextView;
import android.widget.Toast;

@SuppressWarnings("ALL")
public class MainActivity extends AppCompatActivity {



    TextView mcurrentheight;
    TextView mcurrentweight,mcurrentage;
```

```
ImageView mincrementage,mdecrementage,mincrementweight,mdecrementweight;
SeekBar mseekbarforheight;
Button mcalculatebmi;
RelativeLayout mmale,mfemale;

int intweight=55;
int intage=22;
int currentprogress;
String mintprogress="170";
String typerofuser="0";
String weight2="55";
String age2="22";

@SuppressLint("ResourceAsColor")
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main); // to link java to xml

    getSupportActionBar().hide();
    mcurrentage=findViewById(R.id.currentage);
    mcurrentweight=findViewById(R.id.currentweight);
    mcurrentheight=findViewById(R.id.currentheight);
    mincrementage=findViewById(R.id.incrementage);
    mdecrementage=findViewById(R.id.decrementage);
    mincrementweight=findViewById(R.id.incremetweight);
    mdecrementweight=findViewById(R.id.decrementweight);
    mcalculatebmi=findViewById(R.id.calculatebmi);
    mseekbarforheight=findViewById(R.id.seekbarforheight);
    mmale=findViewById(R.id.male);
    mfemale=findViewById(R.id.female);
```

```
mmale.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        mmale.setBackground(ContextCompat.getDrawable
        (getApplicationContext(),R.drawable.malefemalefocus));
        mfemale.setBackground(ContextCompat.getDrawable
        (getApplicationContext(),R.drawable.malefemalenotfocus));
        typerofuser="Male";

    }
});


mfemale.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        mfemale.setBackground(ContextCompat.getDrawable
        (getApplicationContext(),R.drawable.malefemalefocus));
        mmale.setBackground(ContextCompat.getDrawable
        (getApplicationContext(),R.drawable.malefemalenotfocus));
        typerofuser="Female";
    }
});

mseekbarforheight.setMax(300);
mseekbarforheight.setProgress(170);
mseekbarforheight.setOnSeekBarChangeListener
(new SeekBar.OnSeekBarChangeListener() {
    @Override
    public void onProgressChanged(SeekBar seekBar,
    int progress, boolean fromUser) {

        currentprogress=progress;
        mintprogress=String.valueOf(currentprogress);
```

```
            mcurrentheight.setText(mintprogress);

        }

        @Override
        public void onStartTrackingTouch(SeekBar seekBar) {

        }

        @Override
        public void onStopTrackingTouch(SeekBar seekBar) {

        }
    });


    mincrementweight.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            intweight=intweight+1;
            weight2=String.valueOf(intweight);
            mcurrentweight.setText(weight2);
        }
    });

    mincrementage.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            intage=intage+1;
            age2=String.valueOf(intage);
            mcurrentage.setText(age2);
        }
    });
```

```
mdecrementage.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        intage=intage-1;
        age2=String.valueOf(intage);
        mcurrentage.setText(age2);
    }
});


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

        intweight=intweight-1;
        weight2=String.valueOf(intweight);
        mcurrentweight.setText(weight2);
    }
});



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

        if(typerofuser.equals("0"))
        {
            Toast.makeText(getApplicationContext(),
            "Select Your Gender First",Toast.LENGTH_SHORT).show();
        }
        else if(mintprogress.equals("0"))
        {
```

```
                Toast.makeText(getApplicationContext(),
                "Select Your Height First",Toast.LENGTH_SHORT).show();
            }
            else if(intage==0 || intage<0)
            {
                Toast.makeText(getApplicationContext(),
                "Age is Incorrect",Toast.LENGTH_SHORT).show();
            }

            else if(intweight==0|| intweight<0)
            {
                Toast.makeText(getApplicationContext(),
                "Weight Is Incorrect",Toast.LENGTH_SHORT).show();
            }
            else {

                Intent intent = new Intent(MainActivity.this, bmiactivity.class);
                intent.putExtra("gender", typerofuser);
                intent.putExtra("height", mintprogress);
                intent.putExtra("weight", weight2);
                intent.putExtra("age", age2);
                startActivity(intent);

            }


        }
    });


}
}
```

## 4.2 bmiactivity.java

```
package com.example.bmi_calculator;
import androidx.appcompat.app.AppCompatActivity;
import android.annotation.SuppressLint;
import android.content.Intent;
import android.graphics.Color;
import android.graphics.drawable.ColorDrawable;
import android.os.Bundle;
import android.text.Html;
import android.view.View;
import android.widget.Button;
import android.widget.ImageView;
import android.widget.RelativeLayout;
import android.widget.TextView;

@SuppressWarnings("Convert2Lambda")
public class bmiactivity extends AppCompatActivity {



    TextView mbmidisplay,mbmicategory,mgender;
    Button mgotomain;
    Intent intent;

    ImageView mimageview;
    String mbmi;
    float intbmi;

    String height;
    String weight;

    float intheight,intweight;
```

```
RelativeLayout mbackground;

@SuppressLint({"ResourceAsColor", "SetTextI18n"})
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_bmiactivity); // to link java to xml
    //noinspection ConstantConditions
    getSupportActionBar().setElevation(0);
    ColorDrawable colorDrawable=new ColorDrawable(Color.parseColor("#1E1D1D"));
    getSupportActionBar().setBackgroundDrawable(colorDrawable);
    getSupportActionBar().setTitle
    (Html.fromHtml("<font color=\"white\"></font>"));
    getSupportActionBar().setTitle("Result");
    intent=getIntent();
    mbmidisplay=findViewById(R.id.bmidisplay);
    mbmicategory = findViewById(R.id.bmicategorydispaly);
    mgotomain=findViewById(R.id.gotomain);

    mimageview=findViewById(R.id.imageview);

    //   mheightdisplay=findViewById(R.id.heightdisplay);
    mgender=findViewById(R.id.genderdisplay);
    mbackground=findViewById(R.id.contentlayout);


    height=intent.getStringExtra("height");
    weight=intent.getStringExtra("weight");


    intheight=Float.parseFloat(height);
    intweight=Float.parseFloat(weight);

    intheight=intheight/100;
```

```
intbmi=intweight/(intheight*intheight);



mbmi=Float.toString(intbmi);
System.out.println(mbmi);

if(intbmi<16)
{
    mbmicategory.setText("Severe Thinness");

    mbackground.setBackgroundColor(Color.RED);
    mimageview.setImageResource(R.drawable.crosss);



}
else if(intbmi<16.9 && intbmi>16)
{
    mbmicategory.setText("Moderate Thinness");
    mbackground.setBackgroundColor(R.color.halfwarn);
    mimageview.setImageResource(R.drawable.warning);
    //   mimageview.setBackground(colorDrawable2);

}
else if(intbmi<18.4 && intbmi>17)
{
    mbmicategory.setText("Mild Thinness");
    mbackground.setBackgroundColor(R.color.halfwarn);
    mimageview.setImageResource(R.drawable.warning);
    //mimageview.setBackground(colorDrawable2);
}
else if(intbmi<24.9 && intbmi>18.5 )
{
    mbmicategory.setText("Normal");
    mimageview.setImageResource(R.drawable.ok);
```

```
}
else if(intbmi <29.9 && intbmi>25)
{
    mbmicategory.setText("Overweight");
    mbackground.setBackgroundColor(R.color.halfwarn);
    mimageview.setImageResource(R.drawable.warning);
    //mimageview.setBackground(colorDrawable2);
}
else if(intbmi<34.9 && intbmi>30)
{
    mbmicategory.setText("Obese Class I");
    mbackground.setBackgroundColor(R.color.halfwarn);
    mimageview.setImageResource(R.drawable.warning);
    //  mimageview.setBackground(colorDrawable2);
}
else
{
    mbmicategory.setText("Obese Class II");
    mbackground.setBackgroundColor(R.color.warn);
    mimageview.setImageResource(R.drawable.crosss);
    //  mimageview.setBackground(colorDrawable2);
}


mgender.setText(intent.getStringExtra("gender"));
mbmidisplay.setText(mbmi);


mgotomain.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        Intent intent1=
        new Intent(getApplicationContext(),MainActivity.class);
```

```
                startActivity(intent1);
            }
        });

    }
}
```

## 4.3 splash.java

```
    package com.example.bmi_calculator;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.os.Handler;
import android.view.WindowManager;
@SuppressWarnings("ALL")
public class splash extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_splash);
        getWindow().setFlags(WindowManager.LayoutParams.
        FLAG_FULLSCREEN,WindowManager.LayoutParams.FLAG_FULLSCREEN);
        getSupportActionBar().hide();
        new Handler().postDelayed(new Runnable() {
            @Override
            public void run() {
                Intent intent=new Intent(splash.this, MainActivity.class);
                startActivity(intent);
                finish();
            }
        },4000);
    }
}
```

# Chapter 5

# Result Analysis

## 5.1 Testing

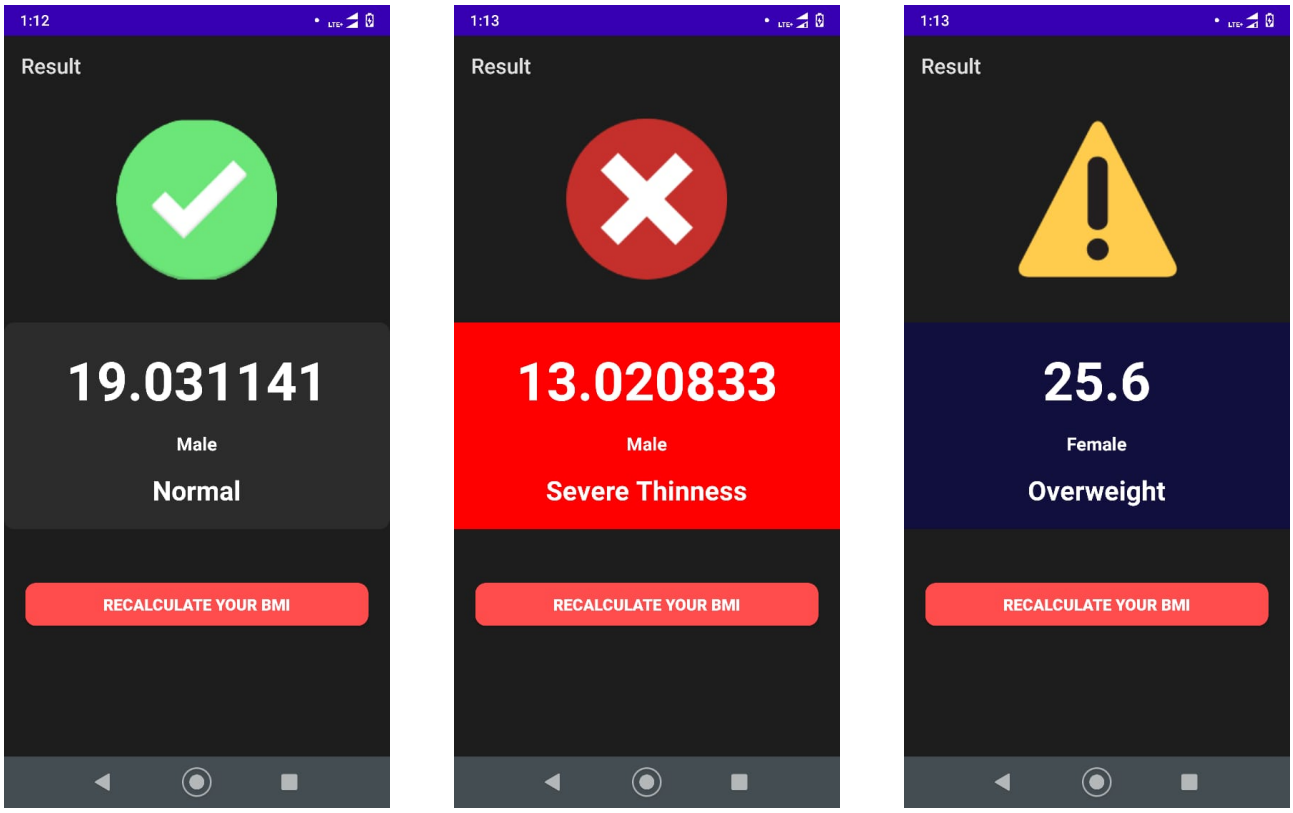
Table 5.1 gives details of validation.

Table 5.1: A small case study

| **Test Case No.** | **Input** | **Expected Output** | **Actual Output** |
|---|---|---|---|
| 1 | User enters Gender: Male Weight: 55 Height: 170 unit | 19.031141 Normal | 19.031141 Normal |
| 2 | User enters Gender: Female Weight: 40 Height: 125 unit | 25.6 Overweight | 25.6 Overweight |
| 3 | User enters Gender: Male Weight: 75 Height: 240 unit | 13.020833 Severe Thinness | 13.020833 Severe Thinness |

to include multiple figures 5.1

## 5.2 Result Snapshots




(a) Normal (b) Severe Thinness (c) Overweight

Figure 5.1: BMI Calculator

# Chapter 6

# Conclusion

Insight – An application to calculate the Body mass index of a person so as to enable them to lead a healthy and safe life. This application is easier to use since it gives the correct estimate of index thereby enabling the person to get to know whether he is obese or severe thin or normal. BMI does not measure body fat directly, but BMI is moderately correlated with more direct measures of body fat 1,2,3. Furthermore, BMI appears to be as strongly correlated with various metabolic and disease outcome. BMI can be a screening tool, but it does not diagnose the body fatness or health of an individual. To determine if BMI is a health risk, a healthcare provider performs further assessments. Such assessments include skinfold thickness measurements, evaluations of diet, physical activity, and family history.Although BMI can be used for most men and women, it does have some limits:It may overestimate body fat in athletes and others who have a muscular build.It may underestimate body fat in older persons and others who have lost muscle.

# References

[1] Anon., 2015. Development of a Health Care Assistant App for the Seniors. International Journal of Applied Science and Engineering, pp. 3-5.

[2] https://www.youtube.com/c/TechProjectsTech Projects

[3] Abhinav Kathuria et al, Challenges in Android Application Development: A Case Study, Vol.4 Issue.5, May- 2015, pg. 294-299