

NMF College of Commerce and Science

Calorie Analyzer

A Project Report

Submitted in partial fulfilment of the
Requirements for the award of the Degree of

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

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MUMBAI, 400101

MAHARASHTRA

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1. Introduction.

Tracking your nutrition for just a few weeks can provide a wake-up call that makes a huge difference in your results for years to come.

To help you determine where you stand I have provided a **Calorie Analyzer** which is based on the Mifflin-St. Jeor equation, to help you calculate your caloric needs.

This easy-to-use analyzer will estimate how many calories your body uses at rest (your Basic Metabolic Rate, or **BMR**) and then factor in additional calories based upon your activity level, age, and gender.

About Calories Analyzer.

A calorie is a unit of energy. We tend to associate calories with food, but they apply to anything containing energy.

The Calories Analyzer will help you to determine how much calories your body needs; to be functioning in steady state which is will evaluate and said to be BMR.

And also based on your activity on day to day life you can get the value which will state as your maintenance calories basically to maintain your weight which is evaluated as TDEE.

How does it work?

An individual will enter his Height, Weight and Age. Then he/she will select to calculate his/her BMR as per the option provided to choose from (i.e. Male/Female)

If you want to re-enter the values you can re-enter by just hitting RESET. It will generate result and then proceed further.

Now calculating your TDEE based on your activity levels which will take the value of your BMR and analyze further for your TDEE value. There will be 4 Activity levels to choose from which will be based on personal level. Finally the output will be displayed in a form of result. And with the final result user will get calories for how much he/she needs to lose weight or gain weight.

Benefits: Once you know your BMR, you can use it to calculate the calories you actually burn in a day. From there, you can determine how many calories you need to eat to gain muscle, lose fat, or maintain your weight.

The overall number of calories your body uses on a daily basis is referred to as your "total daily energy expenditure" (TDEE). It's determined based on your BMR as well as your activity level throughout the day.

Hardware: Windows 7/8/10; RAM: 4+ GB; Storage Space: up to 100 GB.

Software: NetBeans 8.0/1/2

NetBeans IDE: It is an integrated development environment (IDE) for Java. NetBeans allows applications to be developed from a set of modular software components called modules.

It is an open source for all java application types (Java SE, Java ME, web, EJB and mobile applications) out of the box.

Modularity: All the functions of the IDE are provided by modules. Each module provides a well-defined function such as creating an interface with the help of various GUI design tool (Swing) and its components just by dragging and positioning it.

Language used: Java Web Application and Swing components.

You must have stable version of NetBeans IDE 8.2 version with required JDK files.

Also for using Java language, our framework must have Java Swing with proper design and source tab.

Install Java SE, Java Swing components, Java AWT, Java API.

You should also have background knowledge of designing the components in GUI by Java API- Java language and Java Swing based knowledge.

3. System Design Details.

3.1 Methodology.

Waterfall model is a sequential flow which is used in developing particular software.

This helps us to guide through the making of software/application.

It consists of **six phases** which are as follows:

- 1) Requirement Analysis.
- 2) Designing of software.
- 3) Implementation of software.
- 4) Testing/Working of the software.
- 5) Deployment of the software.
- 6) Maintaining of a software.

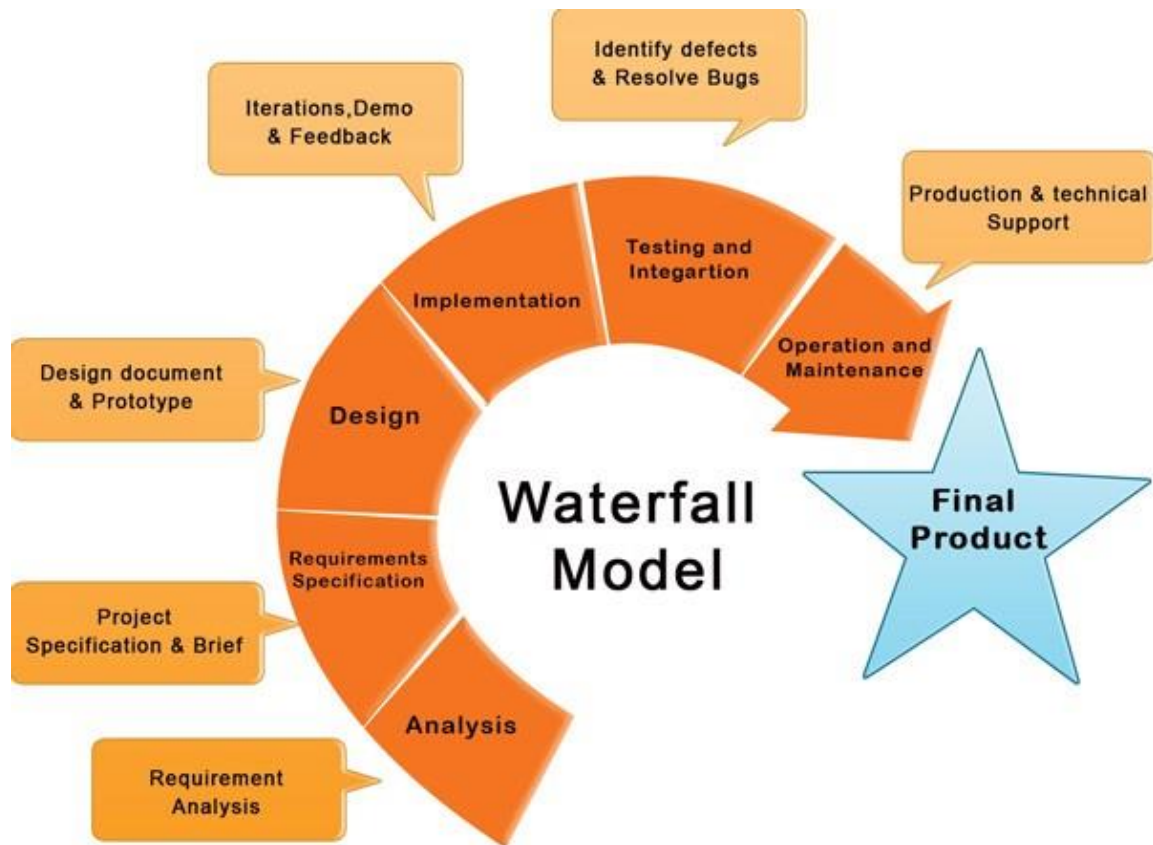
Benefits:

- The main purpose of this model is that it is one time process.
- When you proceed to next phase you can't go back to the previous phase so once you have completed one phase checking thoroughly and moving to next phase is a smart move.
- The use of this model allows to early design of the software in the planning phase then in modeling phase which it is only implemented.
- Tasks of this model to various group of people is easy to manage and co-ordinate.
- Once you have all the requirements needed it is easy to make the software/application.
- As the model is sequential and linear the working of well working software can be divided into group as per the phases.
- The final process or results or output are well log maintained which means it is well documented.

Why I choose this waterfall model for my software/application?

- As my software/application has all the requirements analyze at the start of making the software it is easy for this model to proceed.
- The root of making this software is clear and stable from beginning which means no sudden changes will be done.
- Customer/Client using the final software will not be involved in making of the software.

Diagram Representation.



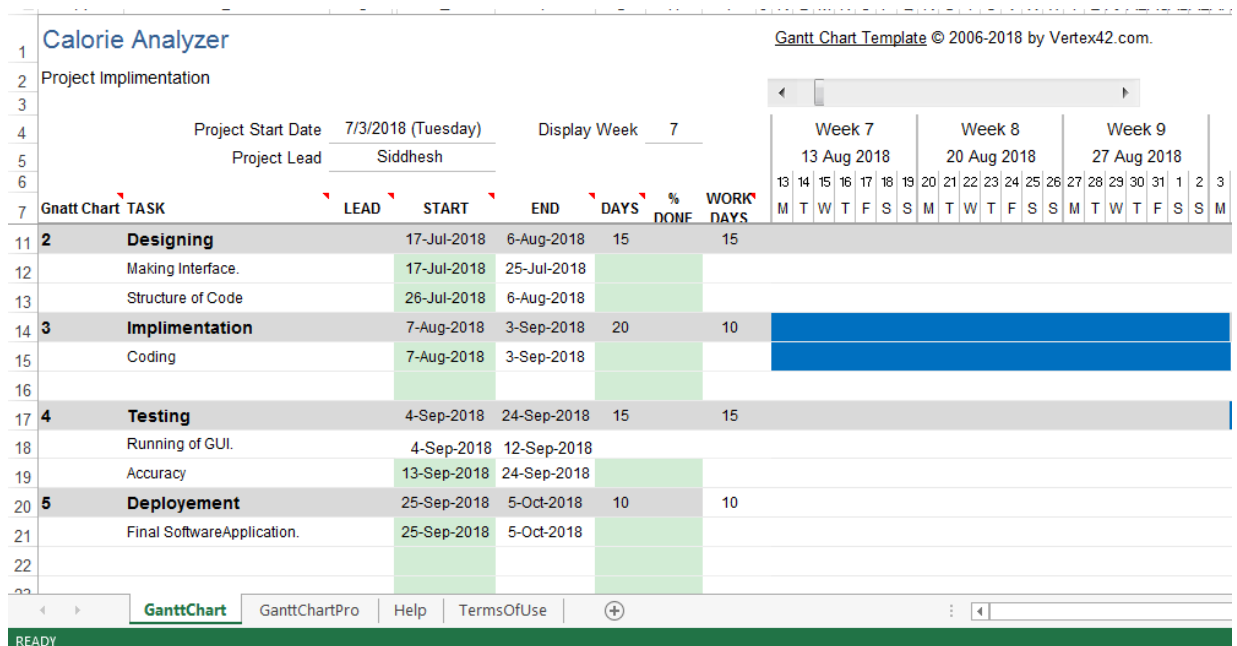
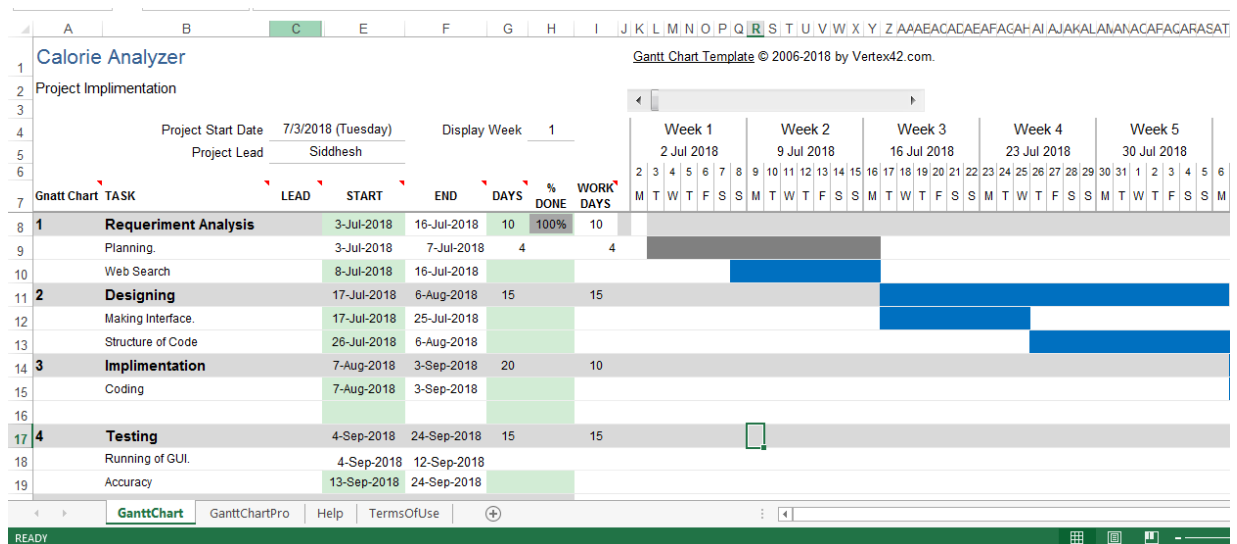
3.2 Architecture.

1) Gantt chart.

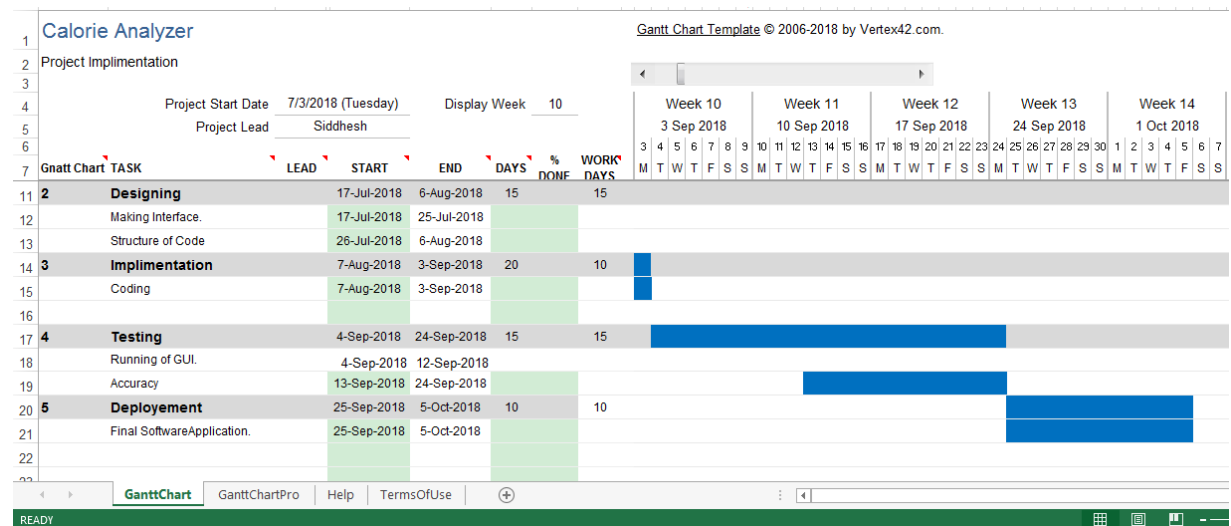
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A Gantt chart is a horizontal bar chart developed as a production control tool. Frequently used in project management, a Gantt chart provides a graphical illustration of a schedule that helps to plan, coordinate, and track specific tasks in project.

Gantt chart give a clear illustration of project status, but one problem with them is that they don't indicate task dependencies – you cannot tell how one task is falling behind schedule affects other tasks.



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2) Pert Chart.

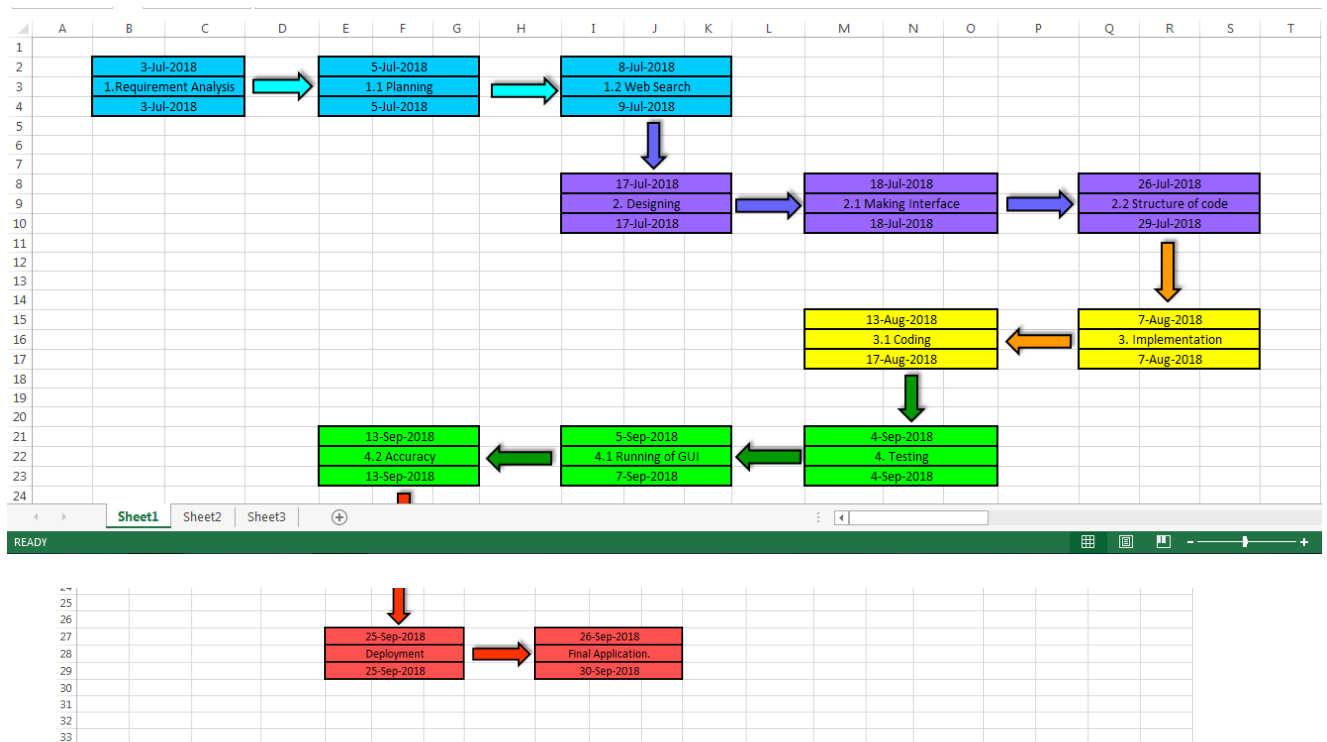
(Program Evaluation Review Technique)

A PERT chart is a project management tool used to schedule, organize, and coordinate tasks within a project.

Pert represents a graphical illustration of a project as a network diagram consisting of numbered nodes representing events, or milestones in the project linked by labelled vectors representing tasks in the project.

The direction of the arrows on the lines indicates the sequence of tasks.

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3.3 UML (Unified Modeling Language).

3.3.1 Activity Diagram.

Activity diagram presents a number of benefits to users. They describe what must happen in the system being modeled.





It is used for starting, ending, merging, or receiving steps in the flow.

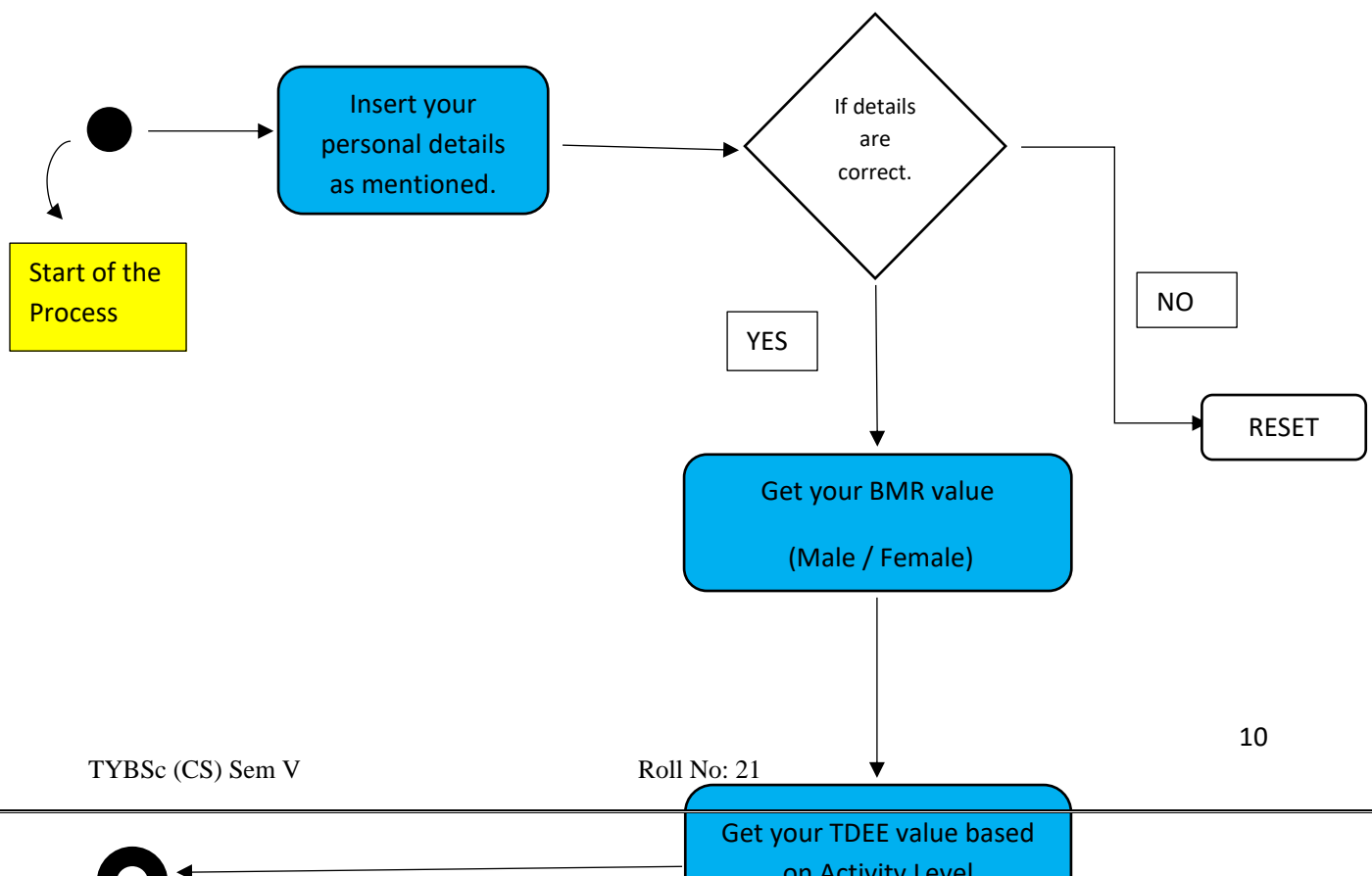
The components of an activity diagram includes:

Action, Decision node, Control flows, Start node, and end node.

Symbol	Name	Description
●	Start symbol	Represents the beginning of a process or workflow in an activity diagram. It can be used by itself or with a note symbol that explains the starting point.

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Symbol	Name	Description
	Activity symbol	Indicates the activities that make up a modeled process. These symbols, which include short descriptions within the shape, are the main building blocks of an activity diagram.
	Connector symbol	Shows the directional flow, or control flow, of the activity. An incoming arrow starts a step of an activity; once the step is completed, the flow continues with the outgoing arrow.
	Condition text	Placed next to a decision marker to let you know under what condition an activity flow should split off in that direction.
	End symbol	Marks the end state of an activity and represents the completion of all flows of a process.



3.3.2 Flow Chart

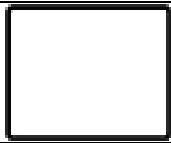

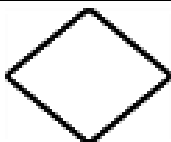

A flowchart is a diagram that depicts a process, system or computer algorithm. They are widely used in multiple fields to document, study, and plan improve and communicate often complex processes in clear, easy-to-understand diagrams. Flowcharts use rectangles, ovals, diamonds and potentially numerous other shapes to define the type of step, along with connecting arrows to define flow and sequence.

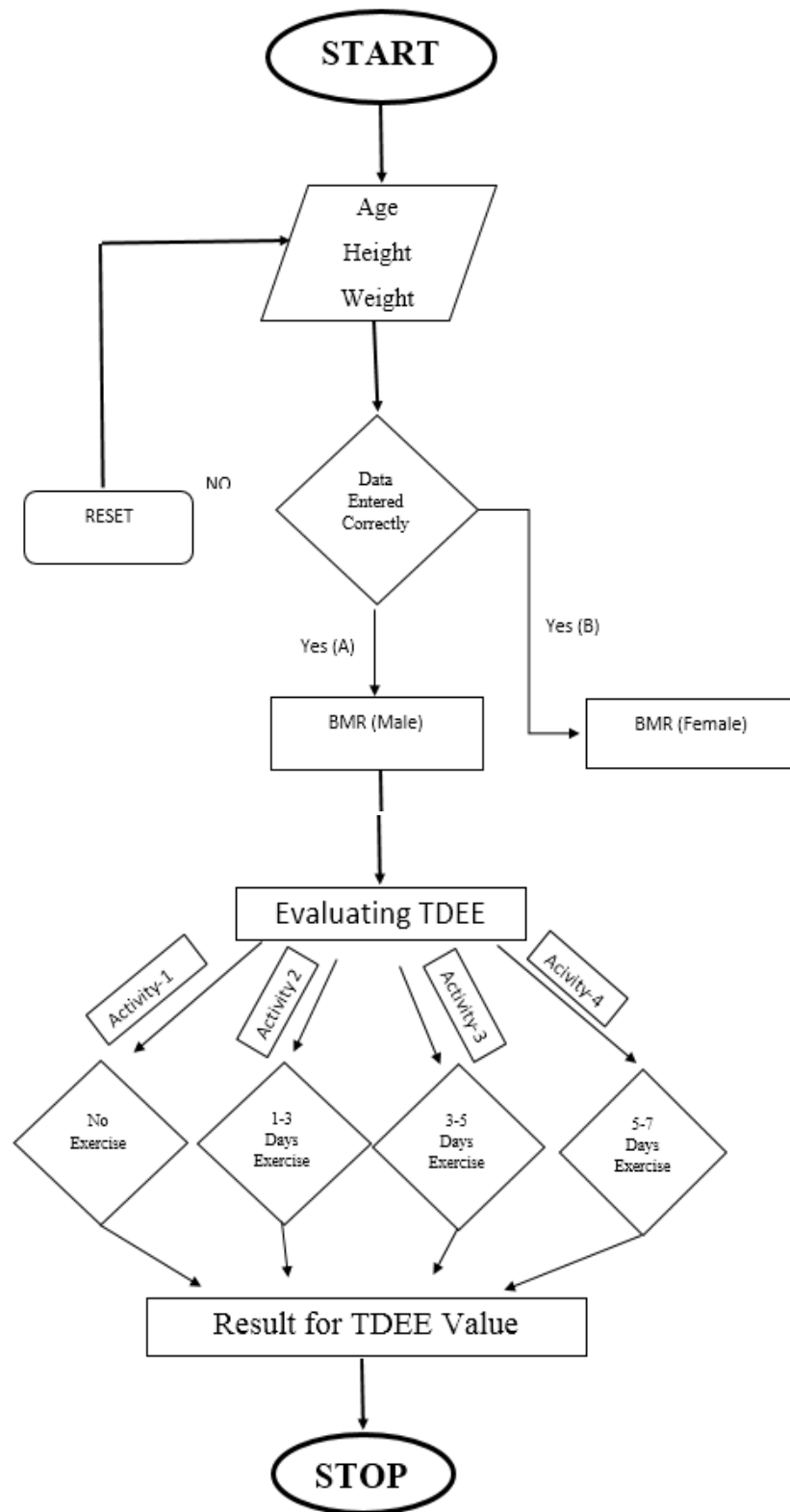
As a visual representation of data flow, flowcharts are useful in writing a program or algorithm and explaining it to others or collaborating with them on it. You can use a flowchart to spell out the logic behind a program before ever starting to code the automated process.

Flowchart symbols

Here are some of the common flowchart symbols:

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Flowchart Symbol	Name	Description
	Process symbol	Also known as an “Action Symbol,” this shape represents a process, action, or function. It’s the most widely-used symbol in flowcharting.
	Start/End symbol	Also known as the “Terminator Symbol,” this symbol represents the start points, end points, and potential outcomes of a path. Often contains “Start” or “End” within the shape.
	Decision symbol	Indicates a question to be answered — usually yes/no or true/false. The flowchart path may then split off into different branches depending on the answer or consequences thereafter.
	Input/output symbol	Also referred to as the “Data Symbol,” this shape represents data that is available for input or output as well as representing resources used or generated. While the paper tape symbol also represents input/output, it is outdated and no longer in common use for flowchart diagramming.



3.3.3 Sequence Diagram.

Sequence diagrams are a popular dynamic modeling solution in UML because they specifically focus on *lifelines*, or the processes and objects that live simultaneously, and the messages exchanged between them to perform a function before the lifeline ends.

A sequence diagram is a type of interaction diagram because it describes how—and in what order—a group of objects works together. These diagrams are used by software developers and business professionals to understand requirements for a new system or to document an existing process. Sequence diagrams are sometimes known as event diagrams or event scenarios.

Classes

Class roles describe the way an object will behave in context. Use the UML object symbol to illustrate class roles, but don't list object attributes.

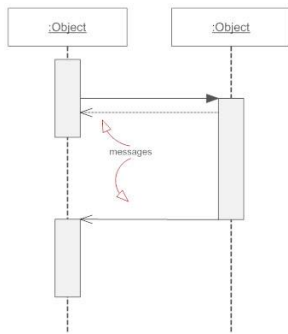


Activation & Execution: Activation boxes represent the time an object needs to complete a task. When an object is busy executing a process or waiting for a reply message, use a thin gray rectangle placed vertically on its lifeline.



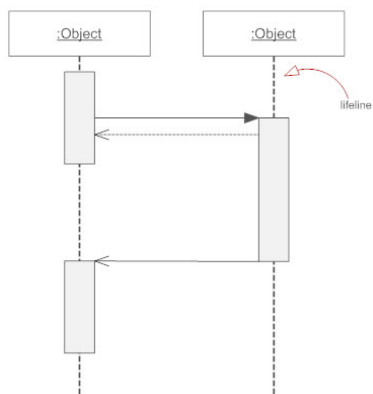
Messages

Messages are arrows that represent communication between objects. Use half-arrowed lines to represent asynchronous messages. Asynchronous messages are sent from an object that will not wait for a response from the receiver before continuing its tasks. For message types, see below.



Lifelines

Lifelines are vertical dashed lines that indicate the object's presence over time.



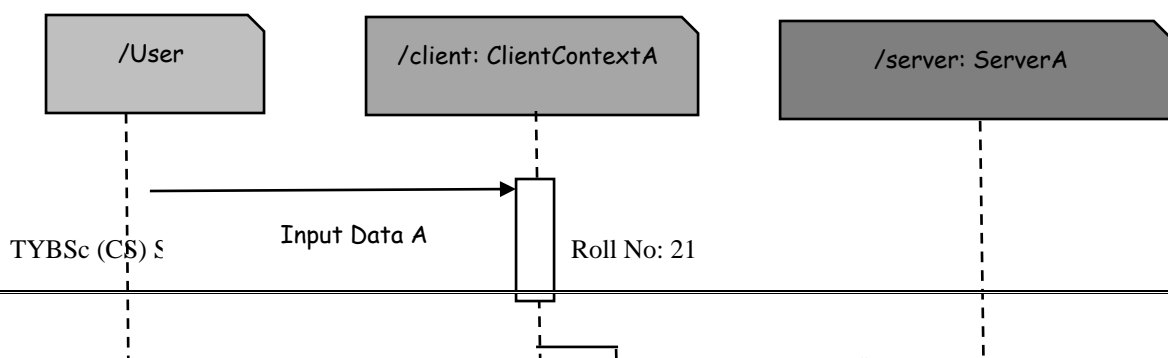
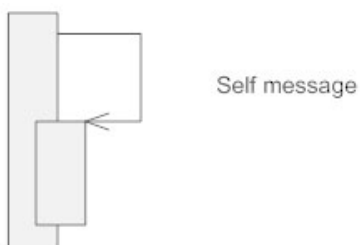
Synchronous-Messages

A synchronous message requires a response before the interaction can continue. It's usually drawn using a line with a solid arrowhead pointing from one object to another.



Self-Message

A message an object sends to itself, usually shown as a U shaped arrow pointing back to itself.



3.3.4 Use – Case Diagram.

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A use case is a written description of how users will perform tasks on your website. It outlines, from a user's point of view, a system's behavior as it responds to a request. Each use case is represented as a sequence of simple steps, beginning with a user's goal and ending when that goal is fulfilled.

Benefits of Use Cases

Use cases add value because they help explain how the system should behave and in the process, they also help brainstorm what could go wrong. They provide a list of goals and this list can be used to establish the cost and complexity of the system. Project teams can then negotiate which functions become requirements and are built.

Elements of a Use Case

Depending on how in depth and complex you want or need to get, use cases describe a combination of the following elements:

Actor – anyone or anything that performs a behavior (who is using the system)

Stakeholder – someone or something with vested interests in the behavior of the system under discussion (SUD)

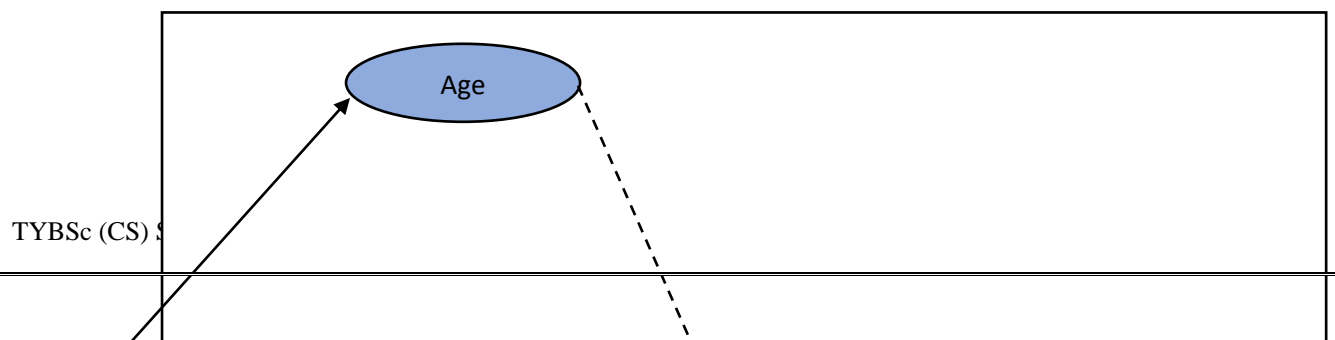
Primary Actor – stakeholder who initiates an interaction with the system to achieve a goal

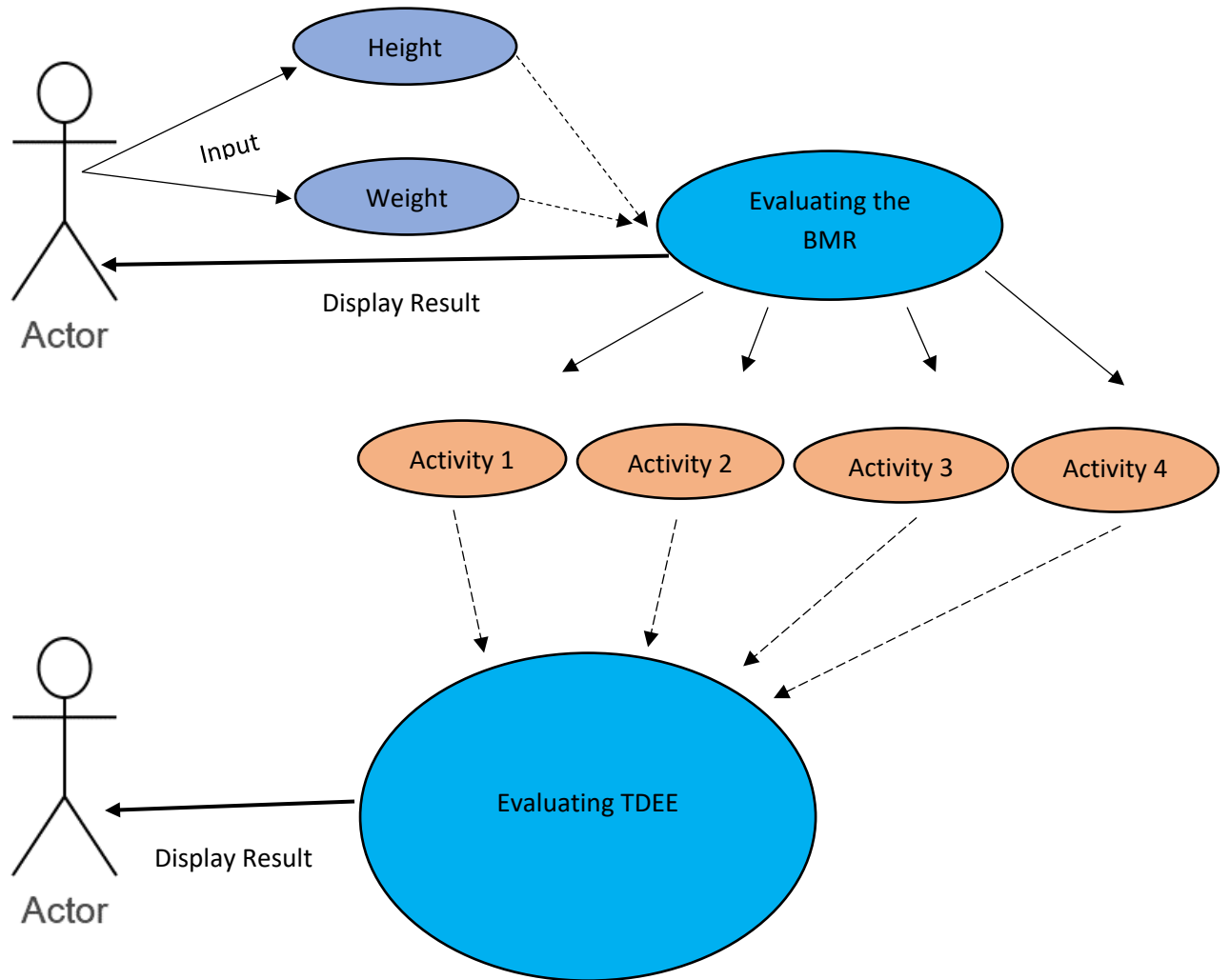
Preconditions – what must be true or happen before and after the use case runs.

Triggers – this is the event that causes the use case to be initiated.

Main success scenarios [Basic Flow] – use case in which nothing goes wrong.

Alternative paths [Alternative Flow] – these paths are a variation on the main theme. These exceptions are what happen when things go wrong at the system level.

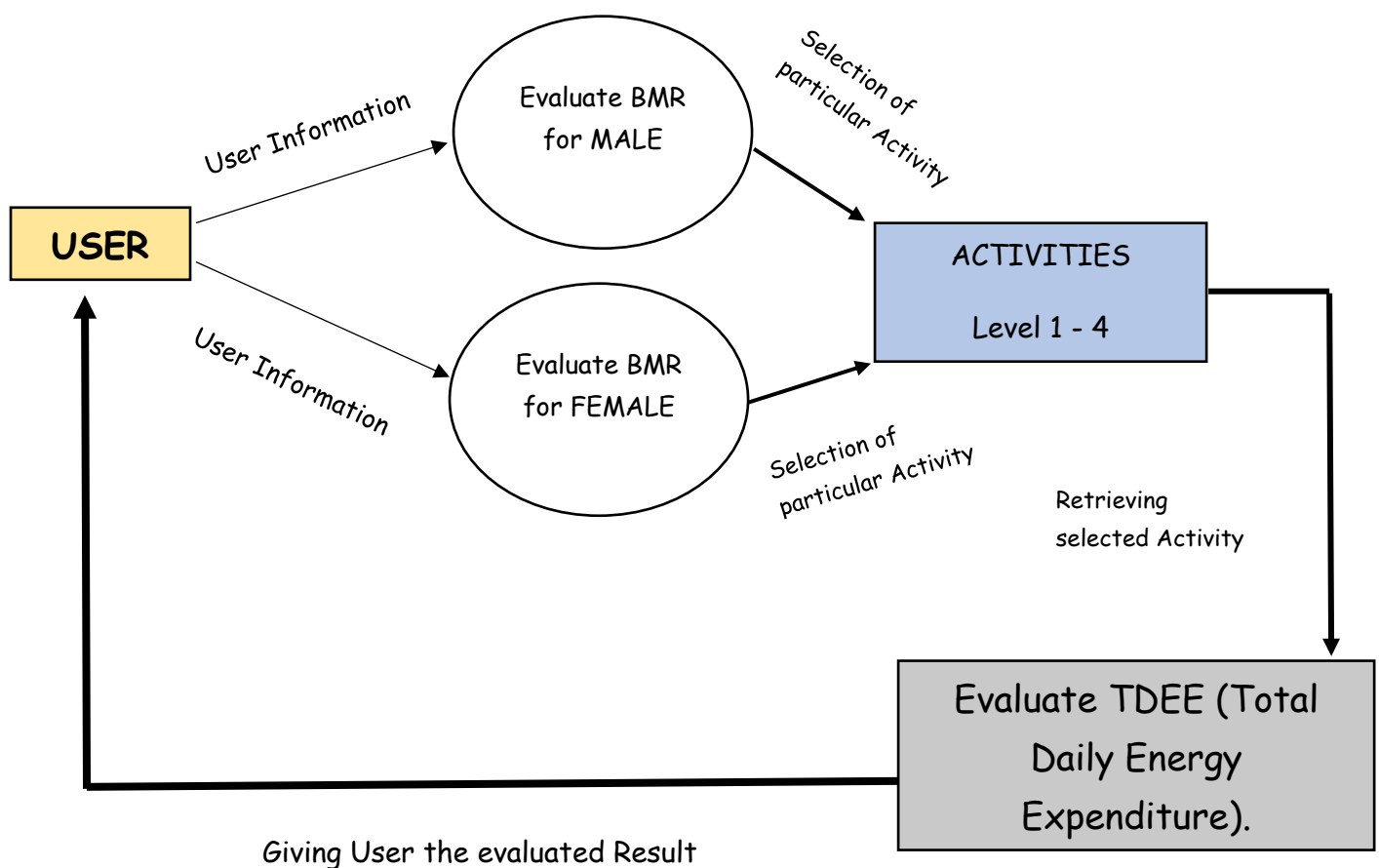




3.4 DFD (Data Flow Diagram).

A data flow diagram (DFD) maps out the flow of information for any process or system. It uses defined symbols like rectangles, circles and arrows, plus short text labels, to show data inputs, outputs, storage points and the routes between each destination.

DFD Level 0 is also called a Context Diagram. It's a basic overview of the whole system or process being analyzed or modeled. It's designed to be an at-a-glance view, showing the system as a single high-level process, with its relationship to external entities.



3.5 Algorithm.

Steps

1. Start.
2. Initialize variables (age, height, weight).
3. Initialize the variables as a data type to Double.
4. Initialize the variable to store the calculated value.
5. Take the Input from User.
6. User has to input the values in given respective text box.
7. If the given data is WRONG then go to Step 7.
8. Click RESET if data entered is incorrect.
9. Click on button created for BMR for either Male or female.
10. This will evaluate the BMR (Basic Metabolic Rate).
11. Select the data to evaluate as per your gender (Male/Female).
12. Evaluate the data given by the user and store it.
13. Display the evaluated result to the user.
14. Now for next phase, to evaluate the TDEE (Total Daily Energy Expenditure).
15. Initialize variables (TDEE, gain, loose).
16. Now give the initialized variables the data type as Double.
17. Now select the input based on choices displayed in form of button accordingly.
18. After selecting the input choice provided, evaluate the following and store in the variable TDEE.
19. Evaluated data should be displayed in the GUI.
20. You will get the value desired and also, how much you need to lose weight as well as gain weight.
21. STOP.

4. System Implementation.

The implementation of Calorie Analyzer is better easily presented with using the NetBeans Framework.

By using JAVA language with the NetBeans functions have great advantage on how the flow of the application / software is set and performed properly.

The Calorie Analyzer make best use of the provided GUI by JAVA swing components to make it look neat and clean and easy to use by the user.

Everyone will able to use and understand without guide on how to use it as the input are simple and in simple language.

By using Java Frame as base and dragging and placing the JTextbox, JLabel and JButton as per the requirement of application is done easily and effortless.

Also, the back end of interface also is easy to do by double click on components and write the desired code to give a specific functions

Initializing, Declarations and Comments are easy to do.

After the coding you can easily run the application / software created.

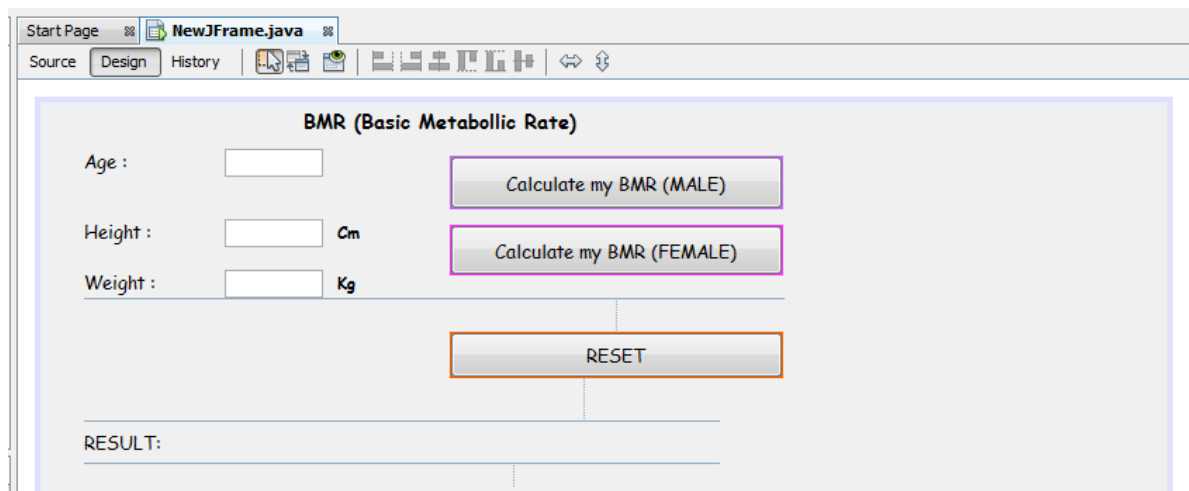
5. Results.

5.1 Preview/Screenshots.

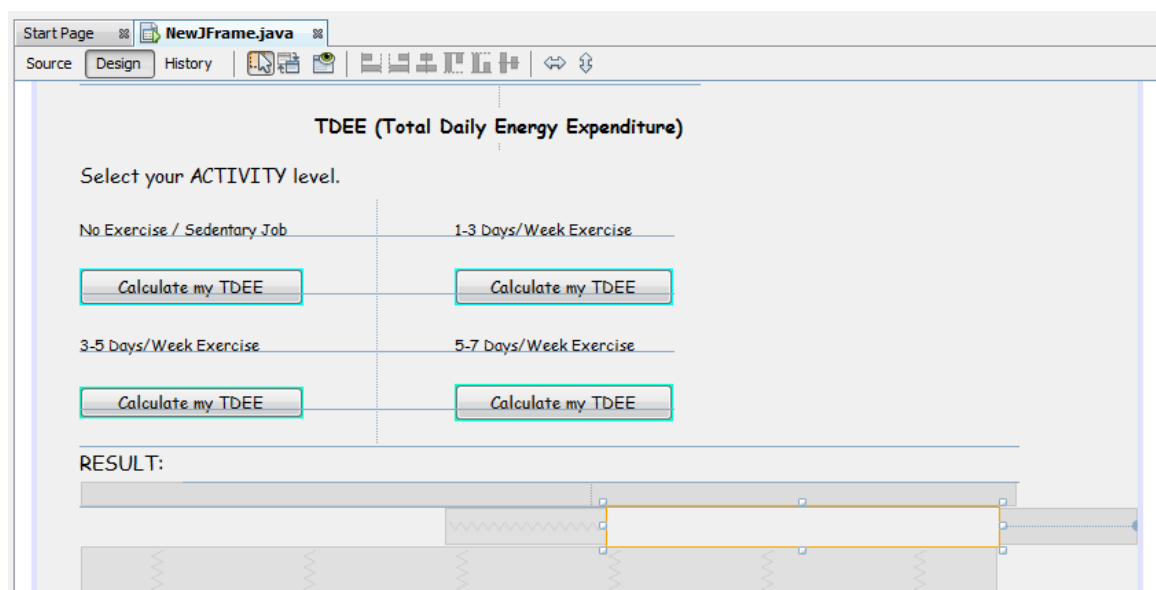
It is a blueprint of what the GUI will look like.

Here you can set up the Java Swing components, and drag and place them where you needed to be. Also you can customize the look and feel and alignment of components for best of user experience. Look at the following image to see the NetBeans design screenshots.

For analyzing the BMR.



For analyzing the TDEE.



The full basic preview of design, of how the user will see the interface.

Calorie Analyzer

BMR (Basic Metabolic Rate)

Age :

Height : Cm

Weight : Kg

Calculate my BMR (MALE)

Calculate my BMR (FEMALE)

RESET

RESULT:

TDEE (Total Daily Energy Expenditure)

Select your ACTIVITY level.

No Exercise / Sedentary Job

1-3 Days/Week Exercise

Calculate my TDEE

Calculate my TDEE

3-5 Days/Week Exercise

5-7 Days/Week Exercise

Calculate my TDEE

Calculate my TDEE

RESULT:

Actual Interface that will User experience.

Calorie Analyzer

BMR (Basic Metabolic Rate)

Age :

Calculate my BMR (MALE)

Height : Cm

Calculate my BMR (FEMALE)

Weight : Kg

RESET

RESULT:

TDEE (Total Daily Energy Expenditure)

Select your ACTIVITY level.

No Exercise / Sedentary Job

1-3 Days/Week Exercise

Calculate my TDEE

Calculate my TDEE

3-5 Days/Week Exercise

5-7 Days/Week Exercise

Calculate my TDEE

Calculate my TDEE

RESULT:

Input given by the user.

Calorie Analyzer

BMR (Basic Metabollic Rate)

Age :

Height : Cm

Weight : Kg

Calculate my BMR (MALE)

Calculate my BMR (FEMALE)

RESET

RESULT:

TDEE (Total Daily Energy Expenditure)

Select your ACTIVITY level.

No Exercise / Sedentary Job

1-3 Days/Week Exercise

3-5 Days/Week Exercise

5-7 Days/Week Exercise

Calculate my TDEE

Calculate my TDEE

Calculate my TDEE

Calculate my TDEE

RESULT:

Generated BMR calories.

The screenshot shows a software application titled "Calorie Analyzer". It is divided into two main sections: "BMR (Basic Metabolic Rate)" and "TDEE (Total Daily Energy Expenditure)".

BMR Section:

- Inputs: Age (19), Height (174 Cm), Weight (63.5 Kg).
- Buttons: "Calculate my BMR (MALE)" (purple), "Calculate my BMR (FEMALE)" (pink), and "RESET" (orange).
- Result: "RESULT: Calories need to be Functioning : 1488.5"

TDEE Section:

- Instruction: "Select your ACTIVITY level."
- Options and Buttons:
 - "No Exercise / Sedentary Job" with a cyan "Calculate my TDEE" button.
 - "1-3 Days/Week Exercise" with a cyan "Calculate my TDEE" button.
 - "3-5 Days/Week Exercise" with a cyan "Calculate my TDEE" button.
 - "5-7 Days/Week Exercise" with a cyan "Calculate my TDEE" button.
- Result: "RESULT:" (no value displayed)

Generated TDEE calories.

Also displaying calories for an individual needs to lose or gain weight.

Calorie Analyzer

BMR (Basic Metabollic Rate)

Age :

Height : Cm

Weight : Kg

Calculate my BMR (MALE)

Calculate my BMR (FEMALE)

RESET

RESULT: Calories need to be Functioning : 1488.5

TDEE (Total Daily Energy Expenditure)

Select your ACTIVITY level.

No Exercise / Sedentary Job

1-3 Days/Week Exercise

3-5 Days/Week Exercise

5-7 Days/Week Exercise

Calculate my TDEE

Calculate my TDEE

Calculate my TDEE

Calculate my TDEE

RESULT: The Calories to maintain your weight :2604.875

Calories to Gain Weight : 2954.875

Calories to Loose Weight : 2354.875

5.2 Reports

The objectives of the project are –

To evaluate BMR (Basic Metabolism Rate) i.e. Calories needed to the body to survive.

To evaluate TDEE (Total Daily Energy Expenditure) i.e. Calories needed to the body if you are doing physical activity.

This Calorie Analyzer can be used by both Male Female

By getting the result of your calories specifically for your body it can further help you to gain weight or lose weight.

By calculating TDEE you will get calories on based off of your specified activity level. So that you can maintain your weight as per your physical activity throughout the day.

You will also get the calories needed for gaining weight and losing weight.

Now by knowing this personalized information you can further change your body by consistently eating nutritious food, doing activity and exercising.

The calorie analyzer covers the huge section for getting fit and into shape you are going for. This is the only way to start up, if you want to change the way you look and feel in your body.

It is important to take care of your body for not only to get a good physique or to just lose weight if you are obese or if you are skinny but because it is the only place you have to live in for your rest of your life.

5.3 References.

For source code and GUI

- For coding reference java tutorials point.
- Oracle docs.
- NetBeans.org

Information about BMR and TDEE

- Body Bodybuilding.com Forum for Description.
- Harris–Benedict Formula used for Source code.
- Understanding the fundamentals of BMR for body.

Making documentation and Diagram presentation

- Lucid chart.com

6. Conclusions and future scope.

The Calorie Analyzer will results will help you further to make up your Macro Nutrients which are branches of those calories.

With Calorie analyzer which is implemented now into desktop system environment can be also implement into android based applications.

If you are start getting into the health and fitness related niche knowing your calories is much important because you have to have your calories in-check for Muscle building, losing fat, also losing weight.

Total daily calories consumption can also be manipulated/maintain to stay same or better your life with your own personalized goals.

The Calorie Analyzer will also be used to evaluate each and every food intake as food contains calories you might have to watch out exactly how much body needed and how much you are taking IN.

Once you've established your daily calorie intake, I suggest initially tracking your weight on a weekly basis.

This will help determine if you need to adjust calorie intake to optimize your fat-loss goals.