Proposal

For

Second Year Project
Bachelor of Science in Information Technology

Druk Fitness App

Submitted by

SONAM THINLEY

Gyalpozhing College of Information Technology

Read carefully before filling the form.

1. Please do not alter the layout of the application form. Information must be filled in the spaces provided, under set format.
2. Guidance notes in various fields should not be deleted.
3. Required information should be duly filled in the specified fields.
4. Required heads/fields which are not relevant to the project should be marked **N/A** (Not Applicable) or left blank and should not be deleted.

Guidelines and Forms

Submission Procedure

Duly filled proposal forms completed in all respects should be submitted in form of soft copy and a hard copy to project guide and project coordinator. On receipt of the applications the proposals will be evaluated by reviewer panel and proposal would then be defended by student groups. The project group may need to revise the proposal in light of the evaluator's recommendations.

For further information, please contact:

Project Coordinator

Sonam Wangmo
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GyalpozhingCollege of Information Technology

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Application for Final Year Project

1. Project Identification

A. Reference Number: (for office use only)	
B. Project Title: 	

C. Project Internal Guide:

Name:	
Designation:	
Organization:	
Mobile # :	Tel. # :
Email:	

C1. Project External Guide:

Name:	**NA**
Designation:	
Organization:	
Mobile # :	Tel. # :
Email:	

C2. Student Group Lead:

Name:	
Roll No:	
Department:	
Mobile # :	Tel. # :
Email:	

D. Organizations Involved in the Project:

(Please identify all affiliated organizations collaborating in the project, and describe their role/contribution to the project.)

D1. Industrial Organizations:

#	Organization Name	Role / Contribution
	NA	

D2. Academic Organizations:

#	Organization Name	Role / Contribution

D3. Funding Organizations:

#	Organization Name	Role / Contribution
	NA	

E. Key Words:

(Please provide a maximum of 5 key words that describe the project. The key words will be incorporated in our database.)

Exercise, Fitness, Offline Based, android applications, virtual Training.

F. Research and Development Theme:

To motivate Bhutanese people to work out in order to stay fit and lead a healthy lifestyle rather than staying in their comfort zone.

G. Project Status:

(Please mark ☑)

☑ New   ☐ Modification to previous Project

☐ Extension of existing project

H. Project Duration:

Expected Starting Date:	15th February, 2021
Planned Duration in months:	5 Months

2. Scope, Introduction and Background of the Project

A. Scope of the Project:

Scope of the project is within Bhutan and it is mainly for the beginner who wants to stay active and fit.

Druk Fitness app will have the following features:

1. One can access without the requirement of internet connection(Offline based app)
2. Anyone can view to this application neither registering nor logging in.
3. There will be three sections: Exercises, Tips and Utility.

   Exercise: Under Exercises will be types of exercise like Yoga, Weightlifting and Cardio. User can view any exercise that they want to do.

   Tips : Users will see basic tips about body muscles and diet.

   Utility : Under this, user can calculate their BMI, Calories, and protein.
4. Images and videos are also included to make the app more interesting and motivating for user.

B. Introduction:

In today's digital world we have a mobile application for everything. The advent of smartphone has completely changed the way we live. COVID-19 arose as a pandemic, resulting in a multi-faceted global crisis. Among other things, we saw a wide range of old and modern digital technologies being used in a variety of ways. They could provide the most affordable ways for millions of people to access information, markets, finance, and governance systems previously unavailable to them. Recently, the trend of health and fitness apps have gained a strong momentum. Because of its simple feature updates, these apps are a useful tool for all fitness freaks and those who don't go to the gym or exercise regularly. They assist them in exercising regularly whether it's at home or other place.

Most of the Bhutanese are unaware of how important it is to stay fit and maintain a healthy lifestyle. The reality in this country today is that 80 percent of Bhutanese do not get the recommended amount of exercise they should, and 25 percent of Bhutanese do not exercise at all. People are not motivated enough to begin an exercise routine or join a gym. The reason maybe due to less number fitness centers in Bhutan which are also quite expensive. In Bhutan, a person has to pay minimum of Nu 5000 per month to join a gym which is quite unaffordable for some people. Some of the Bhutanese bodybuilders such as Mr. Thinley Wangkay Dorji, Mr. Sangay Tshelthrim and Ms. Damcho Zam have made their mark and competed with world class bodybuilders in world competitions. These people are inspiration for someone who wants to have fit and shredded body like them but it takes a lot of sacrifices and discipline to become one of them. For beginners, mobile apps have always been a first option to learn different forms of exercises and in maintaining exercising routine and a healthy dietary plan.

According to a recent poll of 2,000 people by OnePoll, 75% of people believe it's easier to stay fit at home. Since the COVID-19 pandemic began in early 2020, 64% of respondents stated that they're more interested in at-home exercise than ever before

(HealthLine, 2020). Though using a home gym work for some people, many don't have enough space. For such people, exercise apps are suggested to guide them through workouts because many of these exercises require minimal or no equipment. Therefore, with the development of my application, people can learn different forms of exercises such as Yoga and Cardio exercises by watching a video of gym trainers from the world.

<u>Literature Review:</u>

<u>Paper Review:</u>
Smartphone Applications for Patients' Health and Fitness

This article introduces evidence that apps can better help patients reach their health and fitness goals. It then discusses what features to look for in an app, followed by an overview of popular health and fitness apps. Last, patient scenarios with app recommendations, limitations of apps, and future research are discussed.

Healthcare providers are often looking for ways to objectively monitor and improve their patients' health and fitness, especially in between patient visits. As more and more people start to use smartphones, they may provide a tool to help improve a patient's health and fitness. Specifically, fitness applications or "apps" on smartphones are programs that use data collected from a smartphone's inbuilt tools to measure health and fitness parameters.

The Intention to Use Fitness and Physical Activity Apps

The aim of this study is to perform a systematic review of the literature on the intention to use mobile Apps related to fitness and physical activity by consumers. A total of 13 studies are analyzed that propose models for evaluating the intentions to use fitness applications by sport consumers.

The findings revealed several key findings: (a) the Technology Acceptance Model is the most commonly used model; (b) the relationship between perceived utility and potential intentions is the most studied; and (c) diet/fitness is the most evaluated application. These findings can aid technology managers in determining the most important factors to consider when designing potential applications for sports organizations.

App Review:

Pro Gym Workout :

Fabulous: Daily Motivation & Habit Tracker:

This app is one of the best app for those who loves working out regularly. These bodybuilding app content includes workouts, fitness video and gym workout plan which are designed by expert gym app workout trainer. Some of the best features of this app are:

- ✓ No internet connection required
- ✓ Workout videos by professional bodybuilder that show you the right technique and movements with detailed description.
- ✓ BMI calculator, Protein calculator, Calories calculator, Fat calculator
- ✓ Like your favourite exercises and add to favourites.

Fabulous: Daily Motivation & Habit Tracker:

This app is nominated for Google Play's Best App Award and is a winner of Google's Material Design Award for Most Charming Engagement. Fabulous is a science-based app that can help us boost our health and weight loss goals, reset our sleep cycle, and learn mindfulness to help us relax. We'll learn how to build a life-changing morning routine, as well as pick up life-changing habits like meditation and yoga. It has some of the best features that we wish to see in a fitness app. The best feature of this app is that it keeps the track of our daily routine like eating food, work outs and etc.

Home Workout-No equipment:

Home Workouts provides daily workout routines for all our main muscle groups. In just a few minutes a day, we can build muscles and keep fitness at home without having to go to the gym. No equipment or coach needed, all exercises can be performed with just our body weight. The app has workouts for our abs, chest, legs, arms and butt as well as full body workouts. All the workouts are designed by experts. None of them need equipment, so there's no need to go to the gym. With animations and video guidance for each exercise, we can make sure we use the right form during each exercise.

C. **Challenges:**

(Please describe the challenges, specific to this research topic, currently being faced internationally.)

In Bhutan, most of the Bhutanese people are not familiar with a regular physical activity routine which includes the healthy dietary and also physical exercises. This lack of interest in maintaining a healthy lifestyle is mainly because of the following reasons:

- Lack of time.

- Lack of encouragement from friends and family.

- Lack motivations or energy.
- Lack of resources/equipment.

Challenges we could face when developing the App:

1. **Performance** : To make app responsive and smooth as per users expectation might be one of the biggest challenges for me.

2. **Security** : Since the android is Open source which invites more security flaws. Developer and devices manufacturers both can customize as per their need. As user increases and due the openness this platform is more vulnerable to security flaws. Due to this flaws, I might face challenges to keep source code safe from hackers.

3. **Software Fragmentation :** Google released a new version of android every year with different new features and enhancement but the adoption rate of latest version of

android remain slow. For instance, Android 6.0 Marshmallow currently has a higher market share than Android 7.0 Nougat and Android 8.0 Oreo. Hence, we the developers have to target multiple versions of Android while developing mobile apps. We often find it challenging to make the app leverage the features provided by the latest as well as earlier versions of Android operating system.

4. **Marketing :** One of the major challenges of this project is market place. Android has more than 8 millions apps on its market place today and getting my app among them is a challenge.

D. **Motivation and Need:**

   (Please describe the motivation and need for this work.)

   In most of the countries where people are mostly exposed with healthy lifestyle where they integrate gym and exercise routine in their mundane life and make it more effective. But in Bhutan, there is no proper equipment for the people to work out and also there is very few numbers of fitness center which becomes unaffordable for the people and most of them gets discouraged to join gym and other fitness centers in Bhutan.

   Therefore, with the development of this app called "Druk Fitness", it will provide a platform to the interested person to maintain a regular exercise routine as this app provides the proper guidance with minimal requirement of equipments, such as walking, jogging, jumping rope, yoga and weight lifting activities. Most importantly it is inexpensive as it is accessible offline in android mobile devices and it can save time.

3.   Aim and Objectives of the Project

(Please write the actual aim of your project. Also, describe the measurable objectives of the project and define the expected results. Use results-oriented wording with verbs such as 'to develop..', 'to implement..', 'to research..', 'to determine..', 'to identify..' The objectives should not be statements and should not include explanations and benefits. The objective should actually specify in simple words what the project team intends to achieve (something concrete and measurable/ deliverable). Fill only those objectives that are applicable to the proposed project.)

AIM : To develop an android application for Fitness

OBJECTIVES :

✓   To develop a mobile application called "Druk Fitness" for virtual learning of exercises.

✓   To encourage Bhutanese people to maintain healthy lifestyle.

✓   Give free workout ideas.

✓   Monitor the diet easily by calculating the BMI as well as intake calories, protein.

✓   Easily affordable and inexpensive.

✓   To launch app in Google play store.

4. Methodology

A. Development / Research / Test Methodology:

(Please describe the technical details and justification of your development and research plan and test plan and testing strategies. Identify specialized equipment, facilities and infrastructure which are required for the project and their utilization plan. The block diagrams, system flow charts, high level algorithm details etc. have to be provided in this section. Also, describe the overall methodology to be used for the particular research topic)

General Methodology

Following Software process will be involved while developing the project:

Problem statement

This phase Identifies the problem faced within the community and develops the application that must be the solution for the stated problem.

Literature review

This phase discuss about the past research papers related to specified topics. It is written to have strong backbone to support the specified problem. Writing a literature review involves finding relevant publications (such as books and journal articles), critically analyzing them, and explaining what you found.

Requirement gathering

After reviewing enough papers and gathering enough information about how and what to do for requirement gathering, In this phase, the problem will be understand in detail and conduct various meetings and interviews, brainstorming and conducting relevant survey. Along with the requirement gathering, I will also initiate the Documentation process. The output of this phase will be the SRS document which will act as the input for the design phase.

Design

In this phase I will design the database, app icon,user interface and the system design. It also helps in specifying hardware and system requirement.

Implementation

Implementation phase comprises of development of the application where various features of the app will be developed. During the development, every feature will be tested to insure the functionality of each component. The development of the system will be based on the prototyping method for improving the effectiveness and efficiency of the app and welcome new requirements.

Testing

In order to ensure the functionality of each component, every component will undergo unit testing. The tested component will later undergo integration testing to ensure proper functioning of the app. If there are any issues encountered during the testing phase, the issue will be resolved and test again.

Development Model

AGILE MODEL
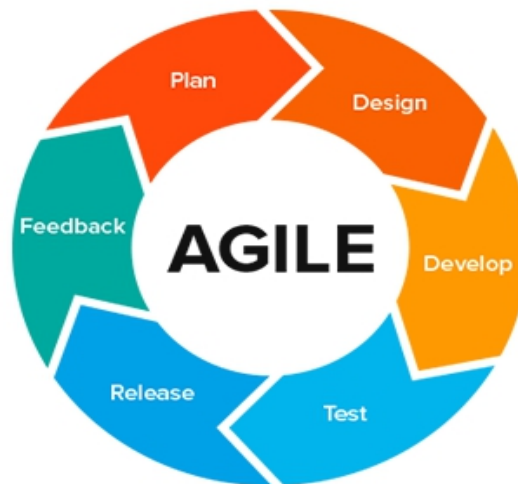
Advantages:

- Resources requirement are minimum.
- Gives flexibility to developers.
- Little or no planning required.
- Functionality can be developed rapidly and demonstrated.
- Delivers early partial working solutions.

B. Project Team:

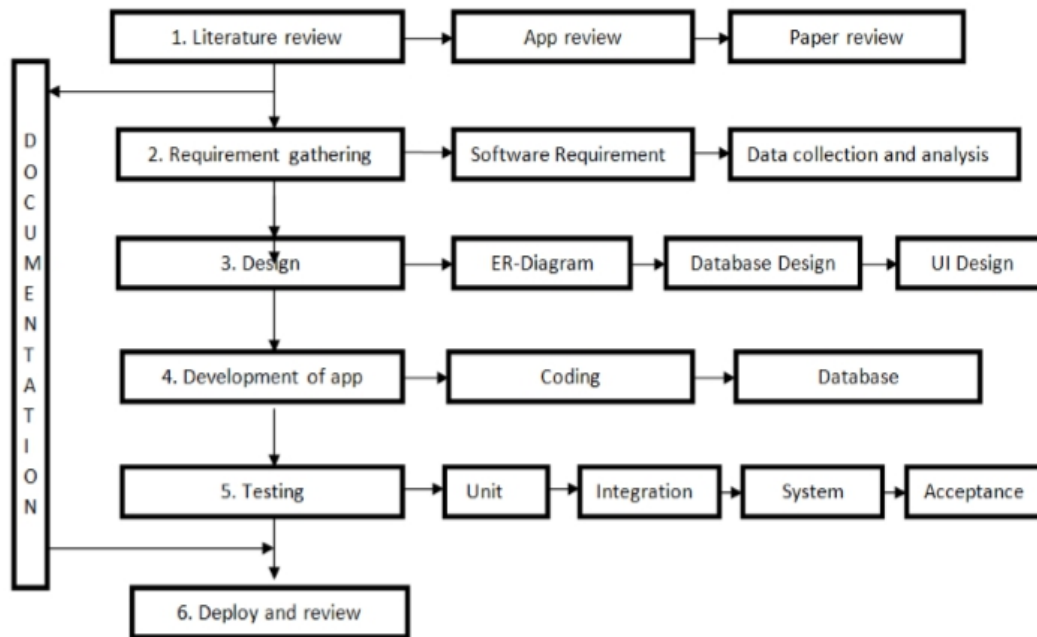| Title / Position	Number
Project Internal Guide	
Project External Guide	
Student Team Members	
Others (please specify)	
Add more rows if required	

C. Project Activities:

(Please list and describe the main project activities, including those associated with the transfer of the research results to customers/beneficiaries. The timing and duration of research activities are to be shown in the Gantt chart in Section 8.)

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                ┌─────────────────┐      ┌─────────────┐      ┌─────────────┐
                │1. Literature    │─────▶│  App review │─────▶│ Paper review│
                │   review        │      └─────────────┘      └─────────────┘
     D          └─────────────────┘
     O          ┌─────────────────┐      ┌──────────────────┐ ┌──────────────────────┐
     C          │2. Requirement   │─────▶│Software          │ │Data collection and   │
     U          │   gathering     │      │Requirement       │ │analysis              │
     M          └─────────────────┘      └──────────────────┘ └──────────────────────┘
     E          ┌─────────────────┐      ┌───────────┐  ┌───────────────┐  ┌──────────┐
     N          │3. Design        │─────▶│ ER-Diagram│─▶│Database Design│─▶│UI Design │
     T          └─────────────────┘      └───────────┘  └───────────────┘  └──────────┘
     A          ┌─────────────────┐      ┌───────────┐      ┌─────────────┐
     T          │4. Development   │─────▶│   Coding  │─────▶│  Database   │
     I          │   of app        │      └───────────┘      └─────────────┘
     O          └─────────────────┘
     N          ┌─────────────────┐    ┌────┐  ┌───────────┐  ┌──────┐  ┌──────────┐
                │5. Testing       │───▶│Unit│─▶│Integration│─▶│System│─▶│Acceptance│
                └─────────────────┘    └────┘  └───────────┘  └──────┘  └──────────┘
                ┌─────────────────┐
                │6. Deploy and    │
                │   review        │
                └─────────────────┘
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Installation of software and tools

Installing of android studio and JDK (java development kit) for development.

Literature review

The project will be doing literature review for the feasibility study. Literature review includes Paper and Related mobile App review;

1. Paper review

   It is done based on the published papers mainly to support my topic and to get more ideas on fitness app. After reviewing the papers I got to know more about fitness and nutritions required for our body and why my project is important and what features I should include in my app. Literature review is discussed in briefly in above section.

2. App Review

Under this section I will discuss about the app that are related to fitness.

Requirement gathering

Requirement gathering includes gathering of information on software development and referring book and watching tutorials related to android application development.

Design

Design phase includes designing a database, designing user interface, app logos and understanding the functionalities, flow of information, keeping the design concepts in mind.

Development

The development phase includes coding using android studio and will initiate the following prototype model which will ensure low risk of project failure and greater flexibility of adjusting to the changing need and requirements.

Testing

After the development phase, "Druk Fitness" application will undergo testing phase where the developed app will be integrated to check its functionalities. If any bug is encountered, the development team will solve the issues and run more tests to ensure proper functionalities of the application.

Final documentation

The final activity is to prepare the project report, user manual and finally conclude with the final presentation.

5. Benefits of the Project (Expected output/outcomes):

My application, the "Druk Fitness" will benefit those people who want to stay fit and those who love to exercise daily. The application will provide free health and fitness tips which helps individuals to meet their healthy goals. This application will help people to monitor their diet easily. The amount of carbohydrate, calories or protein consumed can be calculated and make people aware of which food to be consumed and maintain proper food intake routine. Thus, people will get motivated to stay fit by following the guidance provided by this app and ensure healthy lifestyle.

User Benefits:

- ✓ Easily accessible
- ✓ Can access offline
- ✓ Easily understandable exercises.
- ✓ Get free health and nutrition tips
- ✓ Can calculate BMI, body calories and protein.

Developers Benefit:

- ✓ Earn if it is successful
- ✓ Gain real time project skills

6. Risk Analysis/Feasibility

A. Risks of the Project:

(Please describe the factors that may cause delays in, or prevent implementation of, the project as proposed above; estimate the degree of risk.)

(Please mark ☑ where applicable)	Low	Medium	High
Technical risk	☑		
Timing risk	☑		
Budget risk	☑		

A1. Comments(Describe the risk):

Technical Risks

Technical risk is low because I have laptop with good ram and storage and a free software that is android studio to develop app.

Timing Risk

Low timing risks because I got enough time to complete our project.

Budget Risk

Low budget risk as no finance is required for this project

7. Project Approval Certificate

(Approval of Project Proposal by the Competent Authority (Department Chairman) and Project Review Team is mandatory before the start of project execution.)

Project Review Team:

SI #   Name   Signature

(Please add more rows if required.)

Project Coordinator

Name:

Designation:

Email:

Date: Signature:

Competent Authority – Head of Department

Name:

Designation:

Email:

Date: Signature

& stamp:

8. Reviewers Panel Comments

10. Project Schedule / Milestone Chart /Work plan

(Project schedule using MS-Project (or similar tools) with all tasks, deliverables, milestones, clearly indicated are preferred. Task should be measured in terms of hours)

Activities	Start Date	Days To Complete	End Start
Topic Selection	9-Feb	12	20-Feb
Literature Review	21-Feb	21	13-Mar
Requirement Gathering	15-Mar	11	25-Mar
Design	26-Mar	13	7-Apr
Coding	9-Apr	24	2-May
Testing	4-May	12	15-May
Final Documentation	17-May	8	24-May

WorkPlan

Topic Selection
Literature Review
Requirement Gathering
Design
Coding
Testing
Final Documentation

■ Days To Complete
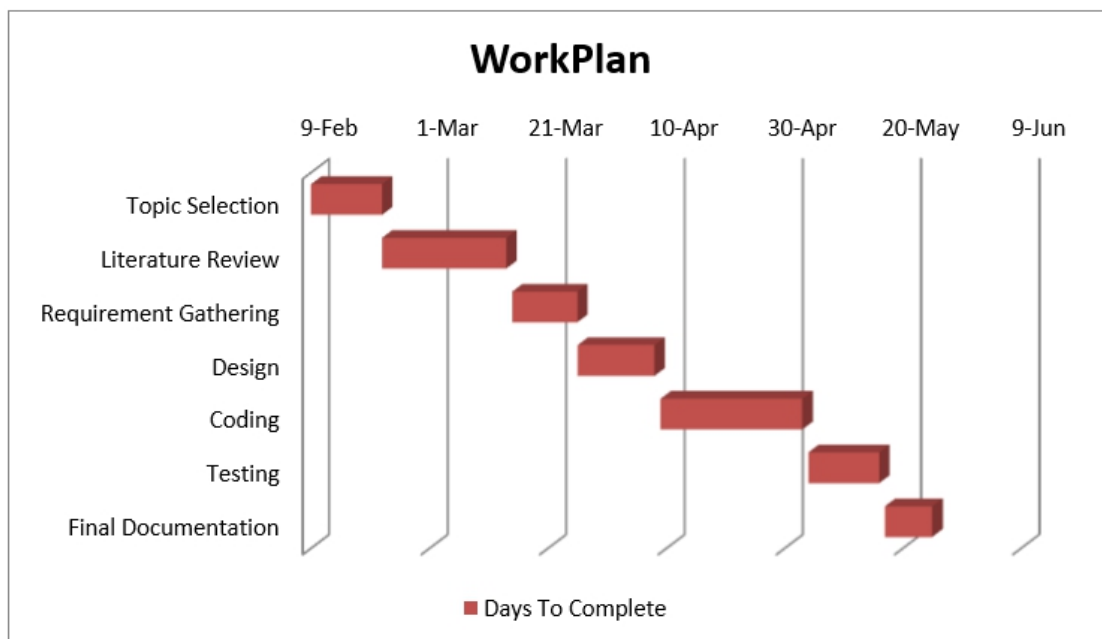
13. Report Writing Guidelines

(Project report will be written under the specified guidelines.)

Bibliography

John, P. (2016). Smartphone Applications for Patients'Healthand Fitness, Accessed March 12, 2021

Salvador A. (2020). The Intention to Use Fitness and Physical ActivityApps, Accessed March 12, 2021

Charles P. (2019). Health Tips for Healthy Living, Accessed March 11, 2021

Leon P. (2020). Best online personal trainer and fitness apps, Accessed March 12, 2021