



The Egyptian e-Learning University
Faculty of Computers and Information Technology

MammoGuard

Graduation Project Documentation

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Acknowledgment:

We would want to convey our heartfelt appreciation and gratitude to our academic supervisors "DR/Alaa Zaki" and "ENG/Aml Talaat", who was a great role model through the course of this project with the topic "Breast Cancer".

His advice and guidance allowed us to perform to our fullest potential. We are quite grateful to them.

Second, we would want to thank our parents, who supported us in life and trusted us, which made us able to achieve this project in a short period of time, as well as our friends for their assistance in completing this project. We are working on this project not only for grades, but also to expand our knowledge.

Finally, I would like to thank everyone who has helped and has been on my side forever.

Abstract:

Globally, breast cancer is the most common cancer among women and the most likely cause of female cancer deaths. High-income countries (HICs) have made the most progress in improving breast cancer outcomes. The death rates from breast cancer dropped by 34% in the US, attributable to the combination of improved early detection and effective adjuvant therapies.

The Breast Health Global Initiative (BHGI) created and validated resource-stratified guidelines (RSGs) as a comprehensive tool set whereby health care systems can be evaluated for their capacity to deliver breast cancer care with existing resources. These RSGs define a prioritization scheme for resource allocation that illustrates a framework for gap analysis to identify when critical resources are missing in a given system. RSGs can provide a platform for policy makers to prepare for breast cancer's rising tide. Paired with assessments to identify key barriers that prevent patients from receiving necessary services, resource-stratified guidelines provide a framework for analyzing healthcare delivery systems as a basis for improving patient outcomes. Once a comprehensive plan is devised, phased implementation is needed to build systems that are functional and sustainable. BHGI is now collaborating with other organizations to support the global campaign Breast Cancer Initiative 2.5 (BCI2.5), a collaborative framework to engage policy makers, governments, non-governmental organizations, clinicians and patient advocates to build breast healthcare capacity in LMICs.

In our groundbreaking initiative, we meticulously engage in the thorough collection and comprehensive analysis of a diverse array of user information and data, utilizing cutting-edge methodologies. Through this intricate analytical process, we effectively and systematically communicate with the user, presenting a detailed assessment of their health status and discerning whether they are afflicted by the condition under consideration.

In instances where a positive diagnosis is confirmed, our protocol seamlessly transitions into a multifaceted approach. We initiate a bespoke guidance program, delivering nuanced and in-depth instructions to the patient on navigating through the intricacies of dealing with the ailment. This encompasses not only medical advice but also holistic recommendations, encompassing lifestyle adjustments and mental well-being strategies tailored to the individual.

Moreover, our commitment extends beyond mere information dissemination. We place paramount importance on the empowerment of the user in their journey towards health and well-being. To achieve this, we incorporate a comprehensive set of precautionary measures, detailed warnings, and personalized tips aimed at fortifying the user's resilience against the potential impact of the tumor. These guidelines, meticulously crafted, serve as a roadmap for the user, enabling them to proactively manage and mitigate the challenges associated with the medical condition.

Furthermore, as part of our holistic approach, we conscientiously direct the user towards the nearest institution renowned for its expertise in handling breast cancer, exemplified by the esteemed "Bahia Foundation." This recommendation is underpinned by our dedication to ensuring that the user receives the highest standard of care from reputable institutions specializing in the field.

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Chapter One

1.1. Introduction

Over the past decades, a continuous evolution related to cancer research has been performed. Scientists applied different methods, such as screening at an early stage, in order to find types of cancer before they cause symptoms. Moreover, they have developed new strategies for the early prediction of cancer treatment outcomes. With the advent of new technologies in the field of medicine, large amounts of cancer data have been collected and are available to the medical research community. However, the accurate prediction of a disease outcome is one of the most interesting and challenging tasks for physicians. As a result, ML methods have become a popular tool for medical researchers. These techniques can discover and identify patterns and relationships between them from complex datasets, and they are able to effectively predict future outcomes of a cancer type.

Stages of breast cancer

Stage 1

Stage 1 breast cancer means that the cancer is small and only in the breast tissue, or it might be found in lymph nodes close to the breast.

Stage 2

Stage 2 breast cancer means that the cancer is either in the breast or in the nearby lymph nodes or both. It is an early-stage breast cancer.

Stage 3

Stage 3 means that the cancer has spread from the breast to lymph nodes close to the breast or to the skin of the breast or to the chest wall.

Stage 4

Stage 4 breast cancer means that the cancer has spread to other parts of the body. For example, the stage of breast cancer is shown in Figure1: Stages of breast cancer.

Breast Cancer Stages

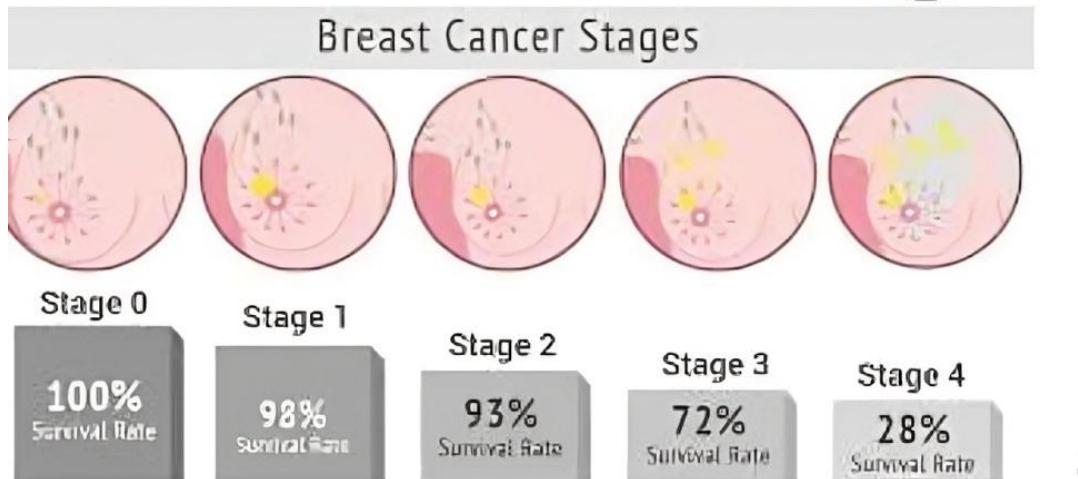


Figure1: Stages of breast cancer

1.2. Problem definition

According to the world health organization (WHO), breast cancer is the most frequent cancer among women, impacting 2.1 million women each year, and also causes the greatest number of cancer-related deaths among women. In 2018, it is estimated that 627,000 women died from breast cancer—that is approximately 15% of all cancer deaths among women. While breast cancer rates are higher among women in more developed regions, rates are increasing in nearly every region globally. In order to improve breast cancer outcomes and survival rates, early detection is critical. Experts have suggested that early breast cancer detection or early screening with proper diagnosis and treatment could increase breast cancer survival rates for the long term.

So in our project, we first have the stage of a breast self-examination, which you do to make sure that you know the normal appearance and texture of your breasts. If you notice a change in your breasts and they look abnormal, or if you notice a difference in one breast from the other when compared, you can go for a mammogram and contact the doctor and ease of communication with breast cancer survivors ,your doctor , and Finding pharmacies where medicines are available and knowing the nearest radiology and analysis centers and finally, scheduling medication schedules and regular checkups.

1.3. Background of Breast Cancer

Breast cancer has been around as long. It can also be traced right back to ancient Egypt, with the earliest recorded case described in the Edwin Smith Papyrus (circa 1600 BC). Because breast cancer is quite outwardly visible in its most advanced state (a state rarely reached today thanks to modern medicine), it frequently captured the vision and imagination of our ancestors enough for them to record.

We have much better diagnostic capabilities today, so more cases are identified.

More women are "breast aware." Nowadays, women are more likely to perform breast self-examinations and get mammograms if they suspect that something is wrong. Women are more likely to receive routine clinical breast examinations at their doctors' offices, inevitably meaning that more cases are identified.

Up until the 19th century, people died young. Breast cancer develops more amongst older women, so this increase in life expectancy could be skewing perceptions. Women used to have more children at a younger age and breastfed for longer, all factors which lowered the risk of breast cancer. Scientists began to establish the relationship between breast cancer and genes.

A sequence in the DNA that can be passed down from parent to child. Genes help determine the physical and functional traits of the body. Surgeons began to see breast cancer as a localized disease (one that could be removed before it spread).

Both of these theories meant shifting away from beliefs about breast cancer relating to bodily fluids, viral contagion or sexual psychology. It now meant that breast cancer could be treated by isolating specific cells or removing affected areas; the beginning of the treatment known today as the mastectomy (An operation removing all or part of the breast).

1.4. Motivation, signification and impact

We can use this application or the website to help patients easily to know information about breast cancer and It helps patients to easily identify the cancer, starting with the initial test, directing the radiology centers, and determining the appropriate treatment based on the directions of the specialist doctor, booking a repeat with him, and periodic follow-up. In the last Gantt, the application is concerned with providing models for survivors of fighting breast cancer and giving hope to patients.

1.5. Project Objectives

Due to the problems faced by breast cancer patients, we have provided many important features in the application and the website that will make it easier for patients such as:

- Self-examination and identification of the presence of a tumor or not.
- Know enough guidance and information to prevent breast cancer.
- Providing diet for breast cancer patients.
- Providing the best doctors at the state level.
- Communicate with the doctors and book with them and follow them.
- Providing the best pharmacies and their place.
- Providing x-ray centers and their place.

Keywords: Breast cancer, detection cancer, Mobile application, Website, DL&M

1.6. Outline of documentation

The contents of chapters, in addition to references. The chapters are organized as follows:

Chapter 2: Presents review of literature of breast cancer, the symptoms of disease, risks and preventive measures.

Chapter 3: discusses stakeholders in our project, project scope statement and constraints.

Chapter 4: System Architecture and methodology.

Chapter 5: Machine Learning and Deep Learning.

Chapter 6: An overview of breast cancer.

Chapter 7: Analysis and Design.

Chapter 8: Conclusion &Layout.



Chapter Two

2.1. Introduction

Breast cancer (BC) is the second most common cancer worldwide and the most commonly occurring malignancy in women (22.9% of female cancers), with more than 2 million new cases diagnosed in 2018. Although the incidence is higher in Western Europe and North America, it is rising in developing countries because of increased life expectancy, urbanization, and the adoption of western lifestyles. According to the American Cancer Society, the five-year survival rate has improved from 63% in 1960 to 90% at present, thanks to earlier diagnosis with mammogram screening and improved surgery and adjuvant treatment. Indeed, in 2018, BC death rates rapidly slowed to 6.6%. However, survivors are at an increased risk of recurrence, even 20 years after the initial diagnosis; in addition, they show an increased risk of weight gain and developing other comorbidities, such as cardiovascular diseases or metabolic disorders. Therefore, the purpose of this research is to review literature on breast cancer that creates awareness, screening, and preventive measures for breast cancer.

2.2. Review of Literature

Cancer is a disease that largely affects the quality of life of people. Breast cancer is more hazardous among all other cancers, which entails a five-year survival rate of about 85% and a ten-year survival rate of 71%. However, early detection and effective treatment can lead to an improved survival rate of breast cancer patients (American Cancer Society, 2014). Screening helps in early detection of breast cancer as it is related to the perceptions of risk, benefit, and barriers through a reasoning process, but it is said that breast cancer screening techniques are underused. However, screening participation will be effective in influencing breast cancer death only if the screening examination is performed at the stage when the breast cancer is detectable on the mammogram.

More than 90% of breast cancer patients seek medical attention only at advanced stages, and as a consequence, almost all breast cancer cases are detected clinically. There are many screening methods, such as mammography and breast self-examination, that aid in early detection, but approximately 77% of people were unaware of breast cancer screening methods. To be noted, a lack of knowledge about how to detect the disease at an early stage would potentially lead to misconceptions regarding its curability and the effectiveness of early detection.

2.2.1. Breast Cancer Symptoms

As a defensive measure, women should know how their breasts normally feel. There are many primary symptoms like insomnia, diarrhea, constipation, loss of taste, fatigue, vomiting, and pain that indicate the existence of breast cancer. In addition to common symptoms like breast symptoms, discomfort due to hair loss, or arm symptoms, there are several dissimilarities in functional aspects like expectations for the future, sexual functionality, and sexual satisfaction as well. All these changes would likely affect women's valuation of their bodies and experience poor body image and body dissatisfaction, which may continue for years following diagnosis and treatment.

2.2.2. Breast Cancer Risk

A different picture of BC in Africa concerning the incidence, the tumor biology, and the population and its risk factors and outcome is seen. Comparing Caucasian and African American patients has revealed differences in tumor biology, leading to differences in outcomes. Lower incidence rates, but higher mortality rates, are reported. Younger age and a higher risk of triple-negative tumors lead to reduced survival in African Americans. The majority of African studies are hospital-based case-control studies with small numbers.

Brinton et al. reviewed the literature on risk factors for BC in African women. Higher parity (as in Africa) is generally thought to be protective, but it may cause a transient increase in risk for premenopausal BC, with subsequent decreases after menopause. Breastfeeding as a protective factor was found, but some studies only showed a weak or no effect. Higher socio-economic status was found to be a risk factor in several studies; this could also be a surrogate for the prevalence of other risk factors (obesity, fewer children, etc.). In addition, better health-seeking behaviors may increase the number of diagnoses made in the higher socio-economic bracket. Several studies found a strong correlation between BC and height, as well as a correlation between higher waist circumference and waist-to hip ratio and BC risk. A large case-control study from South Africa revealed increases in BC risk during the use of hormonal contraceptives, especially progesterone-alone (injectable) options. There is, up to now, a lack of epidemiological studies addressing environmental factors, physical activity, medical history, toxic agents, and most dietary factors, including alcohol. Factors unique to Africa may include infectious agents such as the micro biome, human immunodeficiency virus (HIV) prevalence, and malaria. Environmental agents, such as fertilizers, insecticides including DDT, skin lighteners, and hair relaxers, may also influence the susceptibility to BC.

BC incidence rates are very low in North Africa. Corbel et al. postulated that the risk factors are similar throughout Africa but that the prevalence varies considerably. They compared risk factor patterns in North Africa to Western countries to see if this could explain the low rate of BC, as well as the unique patterns of BC in North Africa, such as early onset, aggressive forms (e.g., inflammatory BC), or high proportions of male Bcc'ing North Africa, the presence of protective factors, especially during the 1980s, was more dominant than in Western countries. The mean number of children, early age at first childbirth, longer duration of breastfeeding, higher age at menarche, early menopause, little use of hormonal contraceptives, less alcohol consumption, and lower body mass index lead to a low-risk profile, which is now more evident in the elderly than in younger North African women.

When looking at age-specific incidence rates, young age groups show similar BC rates compared to Western countries, whereas the older age groups (above age 50 years) have markedly reduced incidence rates. Lack of screening in older age groups may also lead to lower detected incidence rates. Thus, the proportion of BC at a young age is higher due to a lower detected incidence in older women and does not necessarily reflect different African tumor biology. The same applies to male BC, where the proportion is higher due to lower numbers of postmenopausal BC in women. The lower incidence of BC in postmenopausal women also leads to higher proportions of inflammatory BC, as reported in various case series. These observations may explain the difference in the BC pattern in North Africa, which does not necessarily point to a different biology of the disease but rather to a difference in the population structure.

Eng. et al. published a large meta-analysis of articles describing hormone receptor status and human epidermal growth factor receptor 2 (HER2) status in Africa. They reported on 80 studies, including nearly 17,000 tumors. The proportion of estrogen receptor-positive disease was between 20 and 80%. Inflecting factors on the proportion of estrogen receptor-positive disease included the use of archived tissue compared to prospectively collected tissue, the year of collection, and the higher proportion of grade 3 tumors, which had fewer estrogen receptor-positive cases. The more recent and prospectively collected series showed that the majority of cases were estrogen receptor positive. This should encourage the use of tamoxifen as a simple and inexpensive treatment option, even in cases where the receptor status is unknown.

In summary, reproductive and lifestyle risk factors according to small studies from Africa were found similar to those in Western patients, but differences in population structure and risk factor prevalence have to be considered when looking at patient cohorts from Africa. It is possible that larger cohort studies would reveal differences in known risk factors and there could also be unique factors (e.g. fertilizers, co-infections) that contribute to the BC risk in Africa.

2.2.3. Breast Cancer Consequences

In the face of a growing body of literature on health beliefs and health education, there are several studies that are concerned with breast cancer. One of those studies found that women diagnosed with breast cancer and undergoing treatment experience psychological distress. Breast loss is the major cause of psychological distress in women who have been treated for breast cancer. Even though it is measured and found that there is a correlation between women's risk perception and worry about breast cancer, some previous studies reported that inconvenience, embarrassment, worry, fear, etc., are the topmost reasons for hesitation about undergoing screening activities.

The best coping strategy is the one that is strongly associated with the adjustment and functioning of breast cancer patients as well as with emotional distress in recurrent patients. Age and language ability also play a significant role in predicting health status among immigrant women. For example, it is proven that women with better language skills are more likely to obtain breast examinations.

2.2.4. Preventive Measure

Research shows that lifestyle changes can decrease the risk of breast cancer, even in women at high risk. To lower your risk:

1. Limit alcohol. The more alcohol you drink, the greater your risk of developing breast cancer. The general recommendation — based on research on the effect of alcohol on breast cancer risk — is to limit yourself to no more than one drink a day, as even small amounts increase risk.
2. Maintain a healthy weight. If your weight is healthy, work to maintain that weight. If you need to lose weight, ask your doctor about healthy strategies to accomplish this. Reduce the number of calories you eat each day and slowly increase the amount of exercise.

3. Be physically active. Physical activity can help you maintain a healthy weight, which helps prevent breast cancer. Most healthy adults should aim for at least 150 minutes a week of moderate aerobic activity or 75 minutes of vigorous aerobic activity weekly, plus strength training at least twice a week.
4. Breast-feed. Breast-feeding might play a role in breast cancer prevention. The longer you breast-feed, the greater the protective effect
5. Limit postmenopausal hormone therapy. Combination hormone therapy may increase the risk of breast cancer. Talk with your doctor about the risks and benefits of hormone therapy. You might be able to manage your symptoms with non-hormonal therapies and medications. If you decide that the benefits of short-term hormone therapy outweigh the risks, use the lowest dose that works for you and continue to have your doctor monitor the length of time you're taking hormones.

Breast cancer patients, on the other hand, can benefit in a variety of ways, with breast implants being the most important. It would be even easier if they underwent the prescribed exercise properly during treatment. Another study that nourishes the relationship between vegetable consumption and breast cancer risk. Also, there are some specifications about the vegetable intake, like dark yellow types, cruciferous, and tomatoes, that would reduce the risk of breast cancer.

No other dietary factors have been related to the risk of breast cancer either in pre or postmenopausal women.

2.2.5. Breast Cancer Screening

Screening is a boon for breast cancer patients because it aids in the diagnosis of the disease even before symptoms appear. The trials of screening strategies work well in indicating how screening saves lives along with the statement of over diagnosis harmfulness. The population-based approach for implementation of breast cancer screening is recommended as it aims to give each eligible individual an equal chance of getting benefits with effective quality assurance.

The major screening strategies considered in this study are **mammography**, breast self-examination (**BSE**), clinical breast examination (**CBE**), and magnetic resonance imaging (**MRI**). These strategies help in identifying tumors.

Speaking of which Mammography screening is the best method of screening which helps in early detection and reduces breast cancer mortality. A mammogram is an X-ray of the breast. For many women, mammograms are the best way to find breast cancer early, when it is easier to treat and before it is big enough to feel or cause symptoms. Having regular mammograms can lower the risk of dying from breast cancer. At this time, a mammogram is the best way to find breast cancer for most women of screening age. For instance, a recent study found that mammography screening reduces the mortality of breast cancer by an estimated 15%. There is a necessity for investigating various methods to explore the quality and benefits of mammography screening. The newest improvement in mammography screening is called Tom synthesis, which came into practice to improve acceptance. It is especially helpful for women who possess dense breasts. The major advantage of this tom synthesis is lower recall rates and it also facilitates a slight increase in cancer detection. Mammography screening has taken a step forward from plain-film to digital mammography. With the implementation of digital mammography, higher test sensitivity for women aged fifty years and women with dense breasts has been experienced.

MRI is noninvasive and does not use ionizing radiation. It helps physicians diagnose and treat medical conditions. Magnetic resonance imaging (MRI) uses a powerful magnetic field, radio waves, and a computer to produce detailed pictures of the body's internal structures that are clearer, more detailed, and more likely, in some instances, to identify and accurately characterize disease than other imaging methods. It is used to evaluate the body for a variety of conditions, including tumors and diseases of the liver, heart, and bowel. It may also be used to monitor an unborn child in the womb.

Breast self-examination (**BSE**), or regularly examining your breasts on your own, can be an important way to find breast cancer early, when it is more likely to be treated successfully. While no single test can detect all breast cancers early, Breastcancer.org believes that performing a breast self-exam in combination with other screening methods can increase the odds of early detection.

Over the years, there has been some debate over just how valuable breast self examination is in detecting breast cancer early and increasing the likelihood of survival. For example, a 2008 study of nearly 400,000 women in Russia and China reported that breast self-examination does not have a meaningful impact on breast cancer survival rates and may even cause harm by prompting unnecessary biopsies (removal and examination of suspicious tissue). Because of the ongoing uncertainty raised by this and other studies, the American Cancer Society no longer recommends breast self-examination as a screening tool for women with an average risk of breast cancer.

Breastcancer.org still believes that breast self-examination is a useful and important screening tool, especially when used in combination with regular physical exams by a doctor, mammography, and, in some cases, ultrasound and/or MRI. Each of these screening tools works in a different way and has strengths and weaknesses. Breast self-examination is a convenient, no-cost tool that you can use on a regular basis and at any age.

A clinical breast exam (CBE) is a physical exam done by a healthcare provider. It is often done during your regular medical check-up. A CBE should be performed by a health care provider well-trained in the technique. This may be a physician, nurse practitioner, or other medical staff member. Not all healthcare providers have this training. The National Comprehensive Cancer Network (NCCN) recommends a trained health care provider carefully feel your breasts, underarm, and the area just below your clavicle (breast bone) for any changes or abnormalities, such as a lump.

2.3. Conclusion

People need to understand that early detection of breast cancer saves thousands of lives each year. Moreover, it is advisable to seek help from the health providers in taking advantage of the screening tests. Several studies that have been conducted in high-, low-, and middle-income countries have shown that patients with breast cancer and their corresponding families are in need of physical and psychosocial supportive care during their treatment. It is not that a person has breast cancer for taking a screening test. It is unpredictable whether an individual can benefit from screening or end up having treatment. However, the notion here is that if a person chooses to undergo screening, he or she has the chance of having their life extended with some consequences, but if not, they are meant to be risking their life as a whole as a result of lack of early detection. Thus, doing so (i.e., breast cancer screening) will lead to a long-term positive health implication, as once started at an early age, it will continue into adulthood and even throughout life. Practitioners need to provide evocative counseling about breast cancer collectively progressed from personal experience and outside sources to increase the awareness level of early detection through proper screening of breast cancer.



Chapter Three

3.1. Stakeholders

Who is stakeholder....?!

Stakeholders are individuals or groups who have an interest in a project or organization and can influence its outcome. Stakeholders are those with an interest in your outcome. They are people who will be affected by your organization at any point in its life cycle, and their input can directly impact the outcome.

Typical key stakeholders in a project:-

- 1. Patients:** They are the main stakeholders, and they use mobile devices to access health records and initial tests through the application through which they are directed to perform lab tests, schedule appointments, and follow-up. They can participate in their care through health education forms about this disease.
- 2. Clinicians:** Many clinicians appreciate the flexibility of mobile health devices and seek to improve care by accessing patient records and easily establishing correct diagnoses through physician-patient conversations, the use of computerized physician order entry, and electronic prescribing. You must balance costs, security, and ease of use.
- 3. Health care facilities:** Hospitals and health systems, rays centers, ambulatory surgery centers, long-term care facilities, home health agencies, other ancillary providers, and community group homes seek improvements in operational efficiency, reductions in the cost of patient care delivery, the ability to facilitate quality measurement, and expanded reporting capabilities.
- 4. Payers and purchasers (including health insurers):** Payers and purchasers, including self-insured employer groups, to improve health outcomes, provide more readily available data, achieve greater efficiencies, and reduce medical errors.

- 5. Pharmacies:** Pharmacy and drug dispensing centers play a major role as stakeholders, as the patient is directed to the nearest pharmacy where the required drug is easily available.
- 6. Additional stakeholders:** Vendors, suppliers, distributors, small-to-medium enterprise app developers, and consultants could potentially develop businesses via health technologies, and major platform providers also benefit from these developments. The diversity of business models coming from the various players also influences the health market and thus user expectations, regulatory processes, etc.

It's important to understand that your project may have key stakeholders both inside and outside of your organization. That's why it's worth noting the key differences between internal and external stakeholders.

3.1.1. Internal stakeholders in project management

Internal stakeholders are those within your organization. They can include top management, project team members, your peers or co-workers, a resource manager, and internal users.

3.1.2. External stakeholders in project management

External stakeholders are not part of your organization but might include external users, government entities, contractors, and subcontractors, as well as suppliers. Identifying internal and external stakeholders in project management will allow you to better execute your project plan by ensuring each and every stakeholder is informed throughout the project and satisfied with the end result. To ensure you include all relevant internal and external stakeholders, you'll want to learn how to create a stakeholder management plan with our helpful guide.

Project #	Project Description	Date Submitted	Project Class
Breast Cancer	Breast cancer is one of the most common causes of death among women worldwide. Early detection helps in reducing the number of early deaths. The data presented in this article reviews the medical images of breast cancer using an ultrasound scan. The Breast Ultrasound Dataset is categorized into three classes: normal, benign, and malignant images. Breast ultrasound images can produce great results in classification and detection segmentation of breast cancer when combined with machine learning.	1/8/2023	Application(Major) -Flutter frontend(Minor) -Backend(Minor) Artificial intelligence(Major) -Machine Learning(Minor) -Deep Learning(Minor) Database(Major)

Step 1. Project Deliverables

Deliverable	Description
Cancer detection	Using algorithms for machine learning ,Deep learning
Mobile application	Using Flutter with Dart programming in the frontend and Flask for the backend.

Step 2. Out of Scope

This project will NOT accomplish or include the following:	Desktop Application Chat app in mobile Application
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Step 3. Project Assumptions

Please list any project factors that will be considered to be true, real, or certain.

Assumptions generally involve a certain degree of risk.

#	Assumption
1	All equipment will be in working condition through the project cycle.
2	Other material and resource costs will remain consistent throughout the project.



Chapter Four

4.1. System Architecture:

The system architecture is a system with various functions related to breast cancer such as scanning, booking with doctors and communication with them, pharmacy, testing, x-ray centers, tips for eating and health and achievements. The system is used for self-examination and identification of the presence of a tumor or not, and is used to know enough guidance and information to prevent breast cancer as well as a diet for breast cancer patients. It also provides us with a great part in providing the best doctors at the state level so that we can communicate with the doctors, book with them, and follow them. This system also has its own part of the best pharmacies and x-ray centers and their place at the national level.

Project need	The main objectives of this project are to treat breast cancer patients, reassure patients and give them hope to heal, and give guidance to prevent this disease.
System Requirement	By using the breast cancer website and application, users can access the system easily and quickly with a function that should be in the system. These systems also facilitate users to <ul style="list-style-type: none"><input type="checkbox"/> Booking with doctors<input type="checkbox"/> Get the nearest pharmacy and x-ray center for users.<input type="checkbox"/> Following a diet for breast cancer patients Self-examination and educational guidance to prevent breast cancer.
System value	We hope that the system will allow a great number of patients to heal and prevent people from getting this disease.

4.2. Functional Requirements:

Requirement Name	Requirement Description
Log in	This function will enable patients/ doctors to login the system.
Change Password	This function will enable patients/ doctors to change the password.
self-examination	This function will enable patients to identification of the presence of a tumor or not.
guidance and information	This function will enable patients know enough guidance and information.
Booking	This function will enable patients to book and communicate with doctors.
Calendar	This function will enable patients to know the dates of the menstrual cycle.

4.3. Non Functional Requirements:

The non-functional requirements of the breast cancer website and application are described below.

1. Security

The system must have protection from unauthorized users by using a username and password.

The system will show an error if the username and password are not correct. To use the system, every user has to login by keying in their username and password.

2. Performance

- The amount of time it takes for the system to process and respond when a user enters their username and password.
- The system is supposed to respond in less than 2 seconds.

4.4. Methodology:

When crafting a mobile app, we adhere to a structured methodology, similar to web development but tailored to the unique challenges and opportunities that mobile platforms provide.

First, let's discuss the front-end aspect of the mobile app. Similar to web applications, mobile applications require the design of user interfaces (UIs) to ensure an intuitive and engaging user experience. To achieve this, we use a combination of technologies such as XML, Kotlin, Swift or Flutter, depending on the project platform and requirements. These technologies enable us to create visually attractive and responsive interfaces that meet the diverse needs of users across different devices and screen sizes.

Moving to the backend, it serves as the engine that runs the application, handles data management, user authentication, and communication with external services or databases. For mobile backend development, we use powerful frameworks like Firebase, AWS Amplify, or Django REST Framework, which simplify the process of creating secure and scalable backend services. These frameworks provide core functionality such as real-time data synchronization, cloud storage, and authentication, enabling us to build feature-rich mobile applications with seamless connectivity.

In the context of our mobile phone application: First, the person registers or creates a login if he registered before and can change the password if he has forgotten it. Then there is a page for people who have been exposed to the disease before and a step to help patients overcome the disease and the stages of discovering the disease and treating it. There is also a table with the dates of the menstrual cycle and its regularity or It is not organized to facilitate diagnosis, and there is also a page to educate patients about avoiding the things they may be exposed to that will make them sick, then a check-up page to upload the x-ray image to find out if the person is suffering from the disease or not.

In short, our mobile app development methodology includes a structured approach to front-end and back-end design, leveraging cutting-edge technologies and frameworks to deliver robust user-centric solutions that meet the highest standards of quality and performance.



Chapter Five

Abstract:

Breast cancer is one of the most widespread diseases among women in the UAE and worldwide. Correct and early diagnosis is an extremely important step in rehabilitation and treatment. However, it is not an easy one due to several uncertainties in detection using mammograms. Machine Learning (ML) and Deep Learning (DL) techniques can be used to develop tools for physicians that can be used as an effective mechanism for early detection and diagnosis of breast cancer which will greatly enhance the survival rate of patients. This paper compares five of the most popular ML techniques commonly used for breast cancer detection and diagnosis, namely Support Vector Machine (SVM), Random Forest (RF) , K-Nearest Neighbour(KNN),Logistic Regression (LR),and Naive Bayes(NB).as well as ,This paper compares five of the most popular DL techniques commonly used for breast cancer detection and diagnosis, namely, convolutional neural network (CNN),multilayer perceptron(MLP),Transfer Learning (VGG-16),(VGG-19),and (UNET).

The data collected at baseline include breast ultrasound images among women in ages between 25 and 75 years old. This data was collected in 2018. The number of patients is 600 female patients. The dataset consists of 780 images with an average image size of 500*500 pixels. The images are in PNG format. The ground truth images are presented with original images. The images are categorized into three classes, which are normal, benign, and malignant.

original breast cancer data set was used as a training set to evaluate and compare the performance of ML,DL classifiers in terms of key parameters such as accuracy, recall, precision,F1_score ,Confusion Matrix and area of ROC, Loss and Accuracy Diagram . The results obtained in this paper provide an overview of the state of art ML, DL techniques for breast cancer detection.

Introduction:

Cancer is a heterogeneous disease that can be divided into several types.

Breast cancer is one of the most common causes of death among women worldwide. Early detection helps in reducing the number of early deaths. The data reviews the medical images of breast cancer using ultrasound scan. Breast Ultrasound Dataset is categorized into three classes: normal, benign, and malignant images. Breast ultrasound images can produce great results in classification, detection, and segmentation of breast cancer when combined with machine learning or deep learning .medical technologies and the enormous amount of patient data have motivated the path for the development of new strategies in the prediction and detection of cancer. Although the assessment of data collected from the patient's admission to a physician greatly contributes to the process, supporting tools could be added to help facilitate accurate diagnoses. These tools aim to eliminate possible diagnostic errors and provide a fast way for analysing large chunks of data. Machine Learning (ML) Deep Learning (DL), are subfields of Artificial Intelligence (AI) that allows machines to learn without explicit programming by exposing them to sets of data allowing them to learn a specific task through experience. Over the last few decades, ML methods have been widespread in the development of predictive models in order to support effective decision-making. In cancer research, these techniques could be used to identify different patterns in a data set and consequently predict whether a cancer is malignant or benign. Performance of ML, DL classifiers in terms of key parameters such as accuracy, recall, precision, F1_score, Confusion Matrix , Loss and Accuracy Diagram.

5.1. Two different approaches to classify

First approach:

Multiclass “3 classes into classification” to all data set is shown in next

Figure3: First approach of classification.

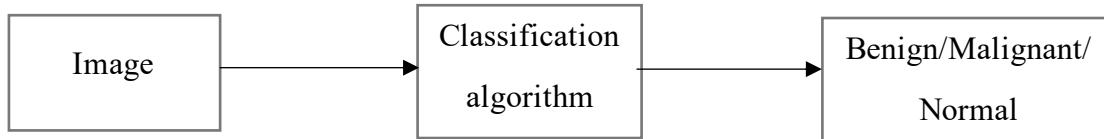


Figure3: First approach of classification

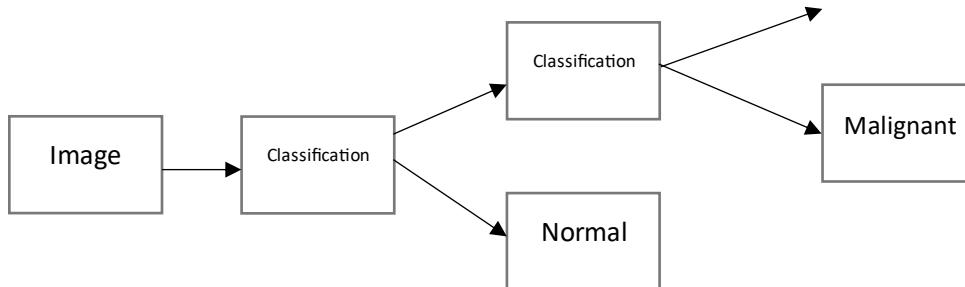
Second approach:

Depend on binary classification:

Show in Figure 4: Second approach of classification

*“normal” non-patient “/ Abnormal class “patient ””.

*“Abnormal consists of "benign / malignant ””.



5.2. Machine learning techniques

Now we will discuss some of important machine learning techniques as:SVM,KNN,RF,LR andNB in brief.

5.2.1 Support Vector Machine:

Support Vector Machine (SVM) is a supervised machine learning algorithm used for classification and regression tasks. It's particularly effective for classification problems, although it can be adapted for regression as well. SVM works by finding the optimal hyperplane that best separates different classes in the feature space.

The "support vectors" in SVM are the data points that are closest to the decision boundary (hyperplane) between classes. These points are crucial in defining the margin, which is the distance between the hyperplane and the support vectors. The goal of SVM is to maximize this margin, as it helps improve the generalization ability of the model and reduces overfitting.

One of the key features of SVM is its ability to handle non-linear decision boundaries through the use of kernel functions. Kernel functions transform the input data into a higher-dimensional space where a linear separation may be possible. Commonly used kernel functions include linear, polynomial, radial basis function (RBF), and sigmoid.

In classification tasks, SVM aims to correctly classify new instances into one of the predefined classes based on the patterns learned from the training data. It achieves this by finding the hyperplane that best separates the classes while maximizing the margin and minimizing classification errors.

SVM has several advantages, including its effectiveness in high-dimensional spaces, its ability to handle non-linear decision boundaries, and its robustness against overfitting, especially in cases of small to medium-sized datasets. However, SVM can be sensitive to the choice of parameters, such as the regularization parameter (C) and the choice of kernel function.

5.2.2.K-Nearest Neighbour:

K-Nearest Neighbors (K-NN) is a simple yet effective supervised machine learning algorithm used for classification and regression tasks. It's a non-parametric method, meaning it doesn't make any assumptions about the underlying data distribution.

The fundamental idea behind K-NN is to classify or predict the label of a new data point based on the majority vote or average of its nearest neighbors in the feature space. In the classification setting, the class of the new data point is determined by the most common class among its K nearest neighbors. In regression, the predicted value for the new data point is the average of the values of its K nearest neighbors.

The choice of the value of K, the number of neighbors to consider, is a crucial parameter in K-NN. A small value of K may result in a highly variable decision boundary, which can be sensitive to noise in the data. On the other hand, a large value of K may result in a smoother decision boundary, but it might fail to capture local patterns in the data.

K-NN operates under the assumption that similar data points tend to belong to the same class or have similar output values. To determine the similarity between data points, K-NN typically uses distance metrics such as Euclidean distance, Manhattan distance, or cosine similarity. The choice of distance metric depends on the nature of the data and the problem at hand.

One of the main advantages of K-NN is its simplicity and ease of implementation. It doesn't require training a model on the entire dataset, as it stores the entire training data and performs computations at the time of prediction. This makes K-NN suitable for small to medium-sized datasets.

However, K-NN can be computationally expensive and memory-intensive, especially when dealing with large datasets. Additionally, it may not perform well in high-dimensional spaces or when the feature space is not uniformly sampled.

Despite its limitations, K-NN is widely used in various applications, including pattern recognition, recommendation systems, and anomaly detection. It serves as a baseline algorithm for many machine learning tasks and can provide decent results, especially when combined with feature scaling and dimensionality reduction techniques.

5.2.3. Random forest:

Random Forest is a powerful and versatile ensemble learning algorithm used for both classification and regression tasks in machine learning. It belongs to the family of tree-based algorithms and is known for its high accuracy, robustness, and ease of use.

Here's a closer look at how Random Forest works:

- 1. **Ensemble of Decision Trees**:** Random Forest is comprised of a collection of decision trees, where each tree is trained independently on a random subset of the training data and a random subset of the features. This randomness helps to ensure that the individual trees are diverse and reduces overfitting.
- 2. **Bootstrap Aggregation (Bagging)**:** Random Forest employs a technique called bootstrap aggregation, or bagging, to create diverse subsets of the training data for each tree. This involves sampling the training data with replacement, resulting in multiple bootstrap samples. Each tree is trained on one of these bootstrap samples, which helps to introduce randomness and reduce the variance of the model.
- 3. **Random Feature Selection**:** In addition to sampling the data, Random Forest also randomly selects a subset of features at each split when growing the trees. This further enhances the diversity among the trees and prevents individual features from dominating the decision-making process.
- 4. **Voting for Classification, Averaging for Regression**:** For classification tasks, when a new data point is presented to the Random Forest model for prediction, each tree independently predicts the class of the input. The final prediction is then determined by taking a majority vote among all the trees. For regression tasks, the final prediction is the average of the predictions of all individual trees.

5.2.4. Logistic regression:

Logistic Regression is a fundamental and widely used statistical method for binary classification tasks in machine learning. Despite its name, logistic regression is a classification algorithm rather than a regression one.

Logistic regression offers several advantages:

- **Interpretability**: The coefficients learned by logistic regression can be interpreted directly in terms of odds ratios, providing insights into the relationships between features and the outcome.
- **Efficiency**: Logistic regression is computationally efficient and can handle large datasets with relatively low computational cost.
- **Regularization**: Techniques like L1 (Lasso) and L2 (Ridge) regularization can be applied to logistic regression to prevent overfitting and improve generalization performance.

However, logistic regression also has limitations:

- **Linearity Assumption**: Logistic regression assumes a linear relationship between the features and the log-odds of the outcome. If the relationship is non-linear, logistic regression may not perform well.
- **Binary Outcome**: Logistic regression is designed for binary classification tasks and cannot be directly applied to problems with more than two classes without modification.

Despite its simplicity, logistic regression remains a powerful and widely used algorithm in various domains, including healthcare, finance, marketing, and social sciences. It serves as a baseline model for many classification tasks and is often used in conjunction with more complex algorithms for model interpretation and comparison.

5.2.5Naïve Bayes:

is a simple yet effective probabilistic classifier based on Bayes' theorem with the "naive" assumption of independence between features. Despite its simplicity, Naïve Bayes has been widely used in various machine learning applications, particularly in text classification and spam filtering.

theorem. It then selects the class with the highest probability as the predicted class for the given instance.

Naïve Bayes offers several advantages:

- ****Simple and Fast**:** Naïve Bayes is easy to implement and computationally efficient, making it suitable for large datasets.
- ****Scalability**:** It can handle a large number of features and instances with relatively low computational cost.
- ****Works Well with High-Dimensional Data**:** Naïve Bayes performs well in high-dimensional spaces, such as text classification tasks with a large number of features.

However, Naïve Bayes has some limitations:

- ****Strong Independence Assumption**:** The assumption of feature independence may not hold true in many real-world datasets, leading to suboptimal performance.
- ****Sensitive to Outliers**:** Naïve Bayes may be sensitive to outliers or extreme values in the data.
- ****Requires Sufficient Data**:** It requires a sufficient amount of data to estimate the probabilities accurately, especially in the case of rare feature combinations.

Despite its limitations, Naïve Bayes remains a popular and useful algorithm, particularly in scenarios where computational efficiency and simplicity are important considerations. It serves as a strong baseline model for many classification tasks and is often used in combination with other algorithms for ensemble learning.

5.3 Pre-processing techniques:

Implementing a Convolutional Neural Network (CNN) algorithm in a breast cancer project can significantly enhance the accuracy and efficiency of diagnosing and predicting breast cancer. Here's a high-level overview of how you might incorporate a CNN into such a project:

- 1. **Data Preparation**:** Gather a dataset of mammography images labeled with breast cancer diagnoses (e.g., benign or malignant). Ensure the dataset is diverse and balanced to prevent biases in the model.
- 2. **Data Preprocessing**:** Preprocess the images to standardize their size, scale pixel values, and augment the dataset to increase its diversity. Techniques like rotation, flipping, and zooming can be applied to create variations of the original images.
- 3. **Model Architecture**:** Design the CNN architecture tailored to the task of breast cancer detection. A typical CNN architecture for image classification tasks includes convolutional layers for feature extraction, pooling layers for dimensionality reduction, and fully connected layers for classification.
- 4. **Training**:** Split the dataset into training, validation, and test sets. Train the CNN using the training set, optimizing its parameters (weights and biases) through backpropagation and gradient descent. Utilize the validation set to tune hyperparameters and prevent overfitting.

5. **Evaluation:** Evaluate the trained CNN using the test set to assess its performance metrics such as accuracy, precision, recall, and F1-score. Additionally, analyze the model's confusion matrix to understand its predictive capabilities and potential areas for improvement.

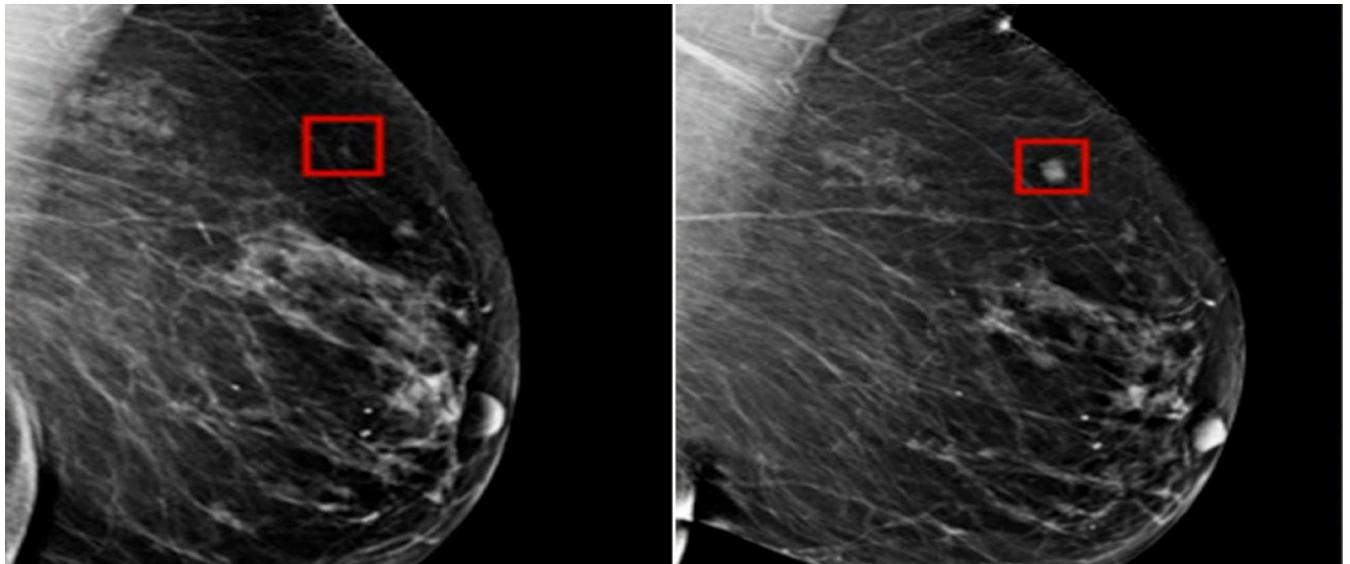
6. **Fine-Tuning:** Fine-tune the CNN by adjusting its architecture, hyperparameters, or training process based on the evaluation results. Techniques like transfer learning, where pre-trained CNN models (e.g., VGG, ResNet) are adapted to the specific task, can also be employed to improve performance.

7. **Deployment:** Deploy the trained CNN model into a production environment, such as a web application or mobile app, where it can be utilized for real-time breast cancer diagnosis. Ensure the deployment pipeline is robust, scalable, and compliant with relevant regulatory standards (e.g., HIPAA for healthcare applications).

8. **Continuous Monitoring and Improvement:** Continuously monitor the performance of the deployed CNN model and gather feedback from users and domain experts. Incorporate new data and insights into the model to keep it up-to-date and effective in diagnosing breast cancer accurately.

By integrating a CNN algorithm into your breast cancer project, you can leverage the power of deep learning to improve the accuracy, efficiency, and accessibility of breast cancer diagnosis, ultimately contributing to better patient outcomes and healthcare delivery.

-Achieving high accuracy with our CNN model in our breast cancer project is a major achievement. Accuracy is a critical metric in evaluating the performance of machine learning models, especially in medical applications where the reliability of predictions is crucial, and here is my Graph Equation report and taxonomy:



“Histogram Equalization”

Classification report:

```
Epoch 19/20
36/36 - 17s 472ms/step - accuracy: 0.9855 - loss: 0.0513 - val_accuracy: 0.8268 - val_loss: 0.7555
Epoch 20/20
36/36 - 17s 472ms/step - accuracy: 0.9774 - loss: 0.0607 - val_accuracy: 0.8189 - val_loss: 0.9181
Output is truncated. View as a scrollable element or open in a text editor. Adjust cell output settings...
<keras.src.callbacks.history.History at 0x1dc071e96d0>

💡 Click here to ask Blackbox to help you code faster
train_loss, train_accuracy = model.evaluate(X_train, y_train, verbose=0)
test_loss, test_accuracy = model.evaluate(X_test, y_test, verbose=0)

print('Training Accuracy:', train_accuracy,"Train loss",train_loss)
print('Testing Accuracy:', test_accuracy,"Test Loss",test_loss)

Training Accuracy: 0.9786053895950317 Train loss 0.10633502155542374
Testing Accuracy: 0.8544303774833679 Test Loss 1.0379860401153564
```



Chapter Six

6.1. Discussion

1. What are the symptoms of breast cancer?

A lump or mass in the breast that feels different from the surrounding tissue.

Change is the shape, size, or appearance of the breast.

Discharge from the nipple
Breast rash
Changes in the skin over the breast, for example, dimpling
Inverted breast pain or nipple pulling-inscaling, peeling, or flaking skin over the breast, particularly the dark area around the nipple. Redness and/or pitting of the breast skin, resembling the skin of an orange.

2. What causes breast cancer?

The exact cause is not known. The risk factors include:

Family history

Hormonal changes

Age-at more risk after 40 years of age

A personal history of breast cancer: Having cancer in one breast increases the chances of having cancer in the other breast.
lifestyle, including excess alcohol consumption, Environmental factors, including exposure to radiation

Obesity and being overweight
Menarche is defined as having periods at a younger age and menopause as having periods at an older age.

Pregnancy: Getting pregnant later in life or never getting pregnant?

Hormone use, including long-term contraceptive use or postmenopausal hormone therapy,

3. Is Breast Removal the Best Treatment for BRCA Mutation?

Women with the breast cancer genes called BRCA1 and BRCA2 often face the decision of whether to have their breasts and ovaries removed to reduce the chance of cancer. But the benefits of these surgeries may be misleading. Women with these inherited BRCA mutations have up to an 80% chance of developing breast cancer in their lifetime and up to a 40% chance of developing ovarian cancer. Surgery to remove seemingly healthy breasts and ovaries is a drastic step, but some have supported it as a way to greatly reduce the chance of cancer linked to BRCA mutations. Though a new analysis shows that preventive surgery does greatly reduce cancer risk, investigators say how much is not clear.

4. Should a breast cancer patient be tested? What tests does he need?

While testing can be helpful in some cases, not every woman needs to be tested, and the pros and cons need to be considered carefully. When it comes to breast cancer risk, the most important inherited gene changes are in the BRCA1 and BRCA2 genes. The two most common lab tests are the hormone receptor test and the HER2/neu test. Results from these tests can provide insight into which cancer treatment options may be most effective for him.

5. What is a breast cancer stage?

Stage 0: This means that the cancer has not grown away from the original site (for example, a breast duct or milk gland). This is sometimes called "in situ" (see below).

Stage I: The cancer has spread into fatty breast tissue or a few cancer cells have spread to the glands (lymph nodes)-for example, in your armpit (axilla).

Stage 2: The cancer has either become a bit bigger or many more cancer cells have spread into up to 3 lymph nodes.

Stage 3: The cancer has become more advanced and has spread to the chest wall or the skin around your breast, or has spread to a larger number of lymph nodes.

Stage 4: Breast cancer cells have spread away from the breast and lymph nodes to more distant parts of the body. The most common sites are the bones, lungs, liver, and brain.

6.Are there different types of breast cancer?

Yes, there are 12 Different Types of Breast Cancer that Affects Women:

1.Tubular Carcinoma of The Breast: This is the most common type of breast cancer that begins inside the breast milk duct and then slowly spreads beyond it into the healthy tissues. Tubular carcinomas are small in size and might have a tube-shaped structure, hence called tubules.

These types of breast cancer account for approximately 8 to 27% of all breast cancers.

2. Ductal Carcinoma in Situ: This is a non-invasive or pre-invasive cancer and is an early stage of breast cancer. In this type, the abnormal cancer cells which have developed inside the milk glands or in the lining of the breast milk duct remain entirely in their place of origin or in situ because the ability to spread has not yet developed.

3. Inflammatory Breast Cancer: Inflammatory breast cancer is the fastest growing type of breast cancer, accounting for 1 to 4% of all cases. This cancer type got its name because the person suffering from it might experience a red, inflamed appearance of the breast skin and might even feel warm and tender when touched. The skin might even look like the pitted skin of an orange peel. Other effects of this cancer include redness and swelling and blocking tiny channels in the breast tissue.

4. Mucinous Breast Cancer: Mucinous, which is also known as colloid, is a type of breast cancer cell and is so called because it can be seen only with the help of a microscope. It is a very common feature that one might notice mucinous types of breast cancer cells.

with other types such as invasive ones while observation. About 2 percent of all breast cancers accounts for mucinous breast cancers.

5. Male Breast Cancer : Every person, whether a man or a woman, has breast tissue. Sometimes even men develop real breast gland tissue due to abnormal hormone levels or the consumption of certain medicines.

6. Lobular Carcinoma in Situ: LCIS is an area of abnormal cell growth rate that increases the person's risk of developing invasive breast cancer. Lobular basically means the development of abnormal cells that start growing in the milk producing glands, lobules, and at the end of breast ducts.

This is an in situ cancer, which means it remains in the place where it develops, say the lobule, and does not spread to surrounding areas. People who are diagnosed with LCIS usually have more than one affected lobule.

7. Breast Cancer During Pregnancy: A pregnant woman might also experience breast cancer during this stage of her life. The reason for breast cancer is not pregnancy, and one might get herself treated during this time.

Treatment during this time causes additional strain and might be a reason for concern for the unborn child. It often becomes a traumatic and difficult situation for both the child and the mother. Pregnant women must make sure to communicate properly with their obstetric surgeon and get medications accordingly.

8. Paget Disease of Nipple: This type of cancer starts in the ducts of the breast and then spreads to the skin of the nipples and finally to the areola, the dark areas around the nipple. It is uncommon and accounts for one percent of all types of breast cancer.

This causes the skin of the nipple and areola to look scaly, red, and crusted and often leads to bleeding. You might even experience an itching or burning sensation during this time.

9. Medullary Carcinoma of the Breast: Medullary Carcinoma is a rare form of breast cancer that represents only 5% of all breast cancer types. It is named "medullary" because the shape of the tissue growth represents the organ "Medulla Oblongata" in the brain. This type of cancer is generally found in a single breast and is less aggressive in growth when compared to the other cancer forms.

10. Phloxes Tumors of the Breast: Phloxes tumors are those that grow in a leaf like pattern, called "phloxes". These tumors are usually detected in women in their 40's, with a common symptom of a lump in the breast. Phyllo tumors are mostly benign and rarely turn malignant. Hence, they are suitable for surgical removal.

11. Metastatic Breast Cancer: Metastatic cancer is the advanced stage of cancer in which the cancer has spread to all the main organs of the body, like the liver, brain, lungs, kidneys, etc. This is called Stage 4 of cancer and is invasive in nature. The tumor cells destroy healthy cells and spread to the lymph nodes and bloodstream. They migrate to a new location and form small colonies.

12. Infiltrating Ductal Carcinoma: This type of cancer is also called Invasive Ductal Carcinoma, deriving its name from its invasive nature. The tumor cells in this type of cancer invade the surrounding cells and tissues to begin new growth. This cancer begins in the milk ducts of the breast and rapidly spreads within and beyond the breast.

7. Do cancer come back after remission?

Yes, cancer might come back some time after the first treatment. This idea can be frightening. There are different reasons why cancer might come back.

These reasons are:

The original treatment didn't get rid of all the cancer cells, and those left behind grew into a new tumor. Some cancer cells have spread elsewhere in the body and started growing there to form a tumor.

Also, cancer can come back after surgery because

-Some cancer cells were left behind during the operation.

-Some cancer cells had already broken away from the primary cancer but were too small to see (micro metastases).

Surgeons do their best to remove all of the cancer during surgery. But it is always possible to leave behind a small group of cancer cells.

Your surgeon may recommend more treatment if they feel that there is a risk that the cancer could come back. This is sometimes called "adjuvant treatment."

6.2. Result

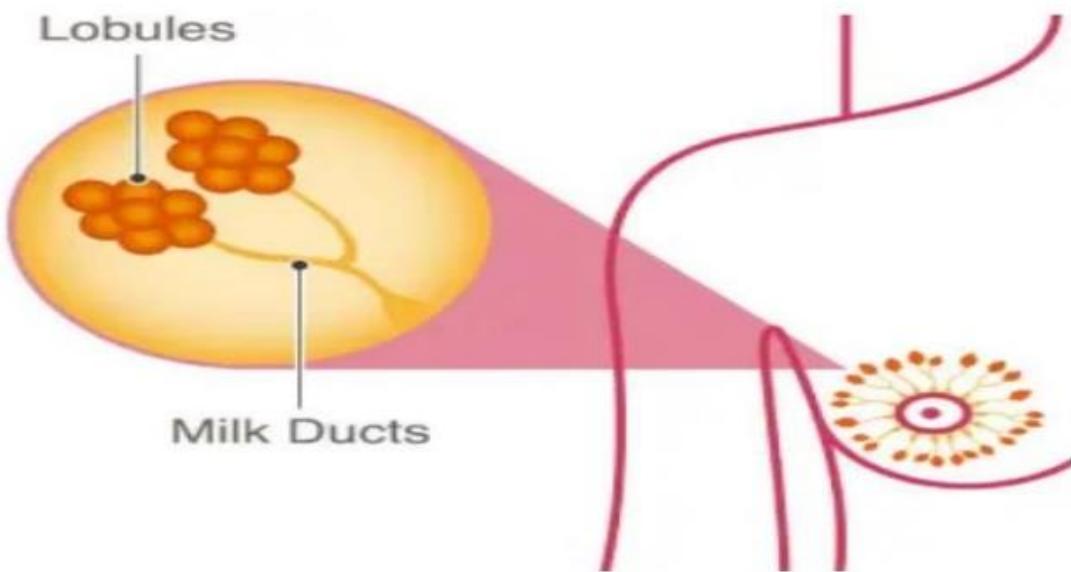
6.2. Result of research

1. The female breast is mostly made up of a collection of fat cells called adipose tissue. This tissue extends from the collarbone down to the underarm and across to the middle of the ribcage. As a woman ages, especially once she reaches menopause, the breast tissue contains more fatty tissue.

Breast cancer refers to cancer that begins in the cells within the breasts. It can metastasize (spread) from the breasts to other areas of the body, such as the bones, lungs, muscles, brain, and liver. The early effects of breast cancer depend on the exact type of breast cancer you have. Most of the early symptoms of breast cancer involves changes to the breasts. Some of these are more noticeable than others.

Breast cancer is not a transmissible or infectious disease. Unlike some cancers that have infection-related causes, such as human papillomavirus (HPV) infection and cervical cancer, there are no known viral or bacterial infections linked to the development of breast cancer.

Where is cancer? A healthy female breast is made up of 12–20 sections called lobes. Each of these lobes is made up of many smaller lobules, and the gland that produces milk in nursing women. Both the lobes and lobules are connected by milk ducts, which act as stems or tubes to carry the milk to the nipple. These breast structures are generally where the cancer begins to form.



Cancer is graded and there are 3 types of grades

You may hear your doctor talk about the grade of your cancer. Tumour grade describes a tumour in terms of how abnormal the tumour cells are when compared to normal cells. It also describes how abnormal the tissues look under a microscope. The grade gives your doctor some idea of how the cancer might behave.

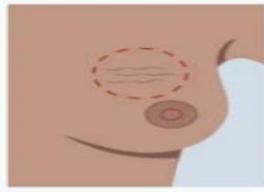
A low grade cancer is likely to grow more slowly and be less likely to spread than a high grade one. Doctors can't be certain exactly how the cells will behave. But the grade is a useful indicator. Doctors sometimes look at the cancer grade to help stage the cancer. The stage of a cancer describes how big the cancer is and whether it has spread or no.

Grade 1 – the cancer cells look very similar to normal cells and are growing slowly (low grade).

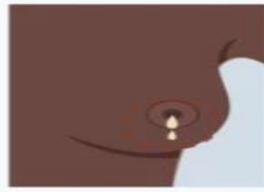
Grade 2 – the cells don't look like normal cells and are growing more quickly than normal (intermediate grade).

Grade 3 – the cancer cells look very abnormal and are growing quickly (high grade).

Signs of cancer:



Changes in skin texture



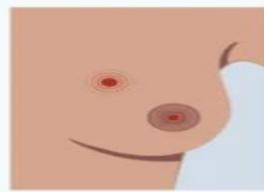
Nipple discharge



Dimpling



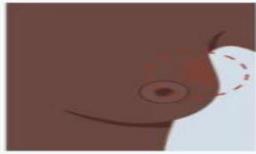
Lymph node changes



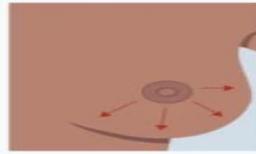
Breast or nipple pain



Retracted or inverted nipple



Changes in skin color



Swelling



Changes in breast size

In 2020, there were 2.3 million women diagnosed with breast cancer and 685,000 deaths globally. As of the end of 2020, there were 7.8 million women alive who had been diagnosed with breast cancer in the past 5 years, making it the world's most prevalent cancer. There are more lost disability-adjusted life years (DALYs) by women to breast cancer globally than any other type of cancer.

Breast cancer occurs in every country in the world in women at any age after puberty, but with increasing rates in later life.

Of 32 countries with incidence and mortality data, rates in the recent period diverged—with incidence increasing and mortality decreasing—in nine countries, mainly in Northern and Western Europe. Both incidence and mortality decreased in France, Israel, Italy, Norway, and Spain. In contrast, incidence and death rates both increased in Colombia, Ecuador, and Japan. Death rates also increased in Brazil, Egypt, Guatemala, Kuwait, Mauritius, Mexico, and Moldova.

Wide variations in breast cancer rates and trends reflect differences in patterns of risk factors and access to and availability of early detection and timely treatment.

Breast cancer treatment can be highly effective, especially when the disease is identified early.

Treatment of breast cancer often consists of a combination of surgical removal, radiation therapy and medication (hormonal therapy, chemotherapy and/or targeted biological therapy) to treat the microscopic cancer that has spread from the breast tumor through the blood. Such treatment, which can prevent cancer growth and spread, thereby saves lives.

6.3. Male breast cancer

All people, whether male or female, are born with some breast cells and tissue. Even though males do not develop milk-producing breasts, a man's breast cells and tissue can still develop cancer.

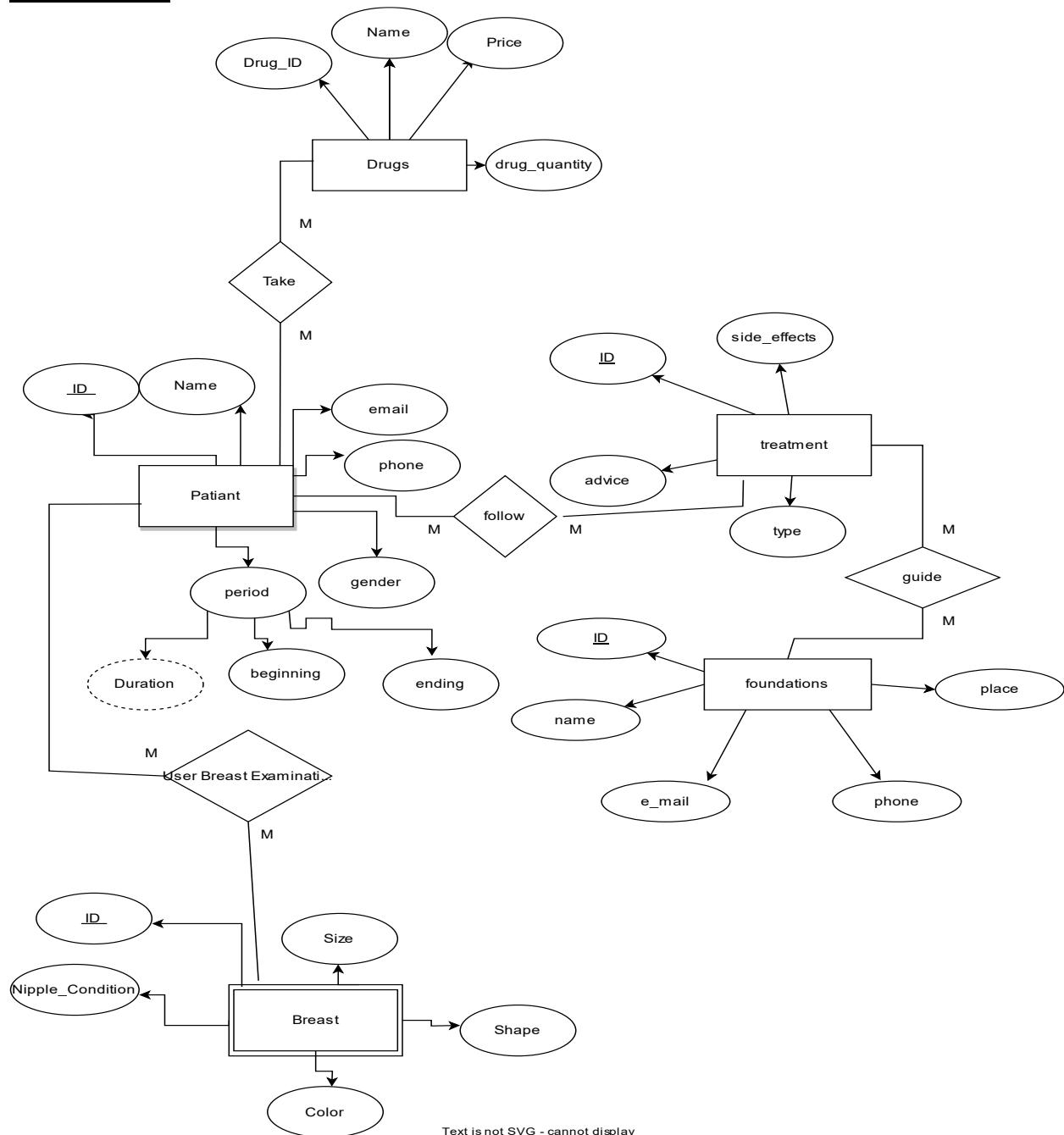
Even so, male breast cancer is very rare. Men account for less than 1% of all breast cancer cases, and only one in a thousand men will ever be diagnosed with breast cancer.

Breast cancer in men is usually detected as a hard lump underneath the nipple and areola. Men carry a higher mortality than women do, primarily because awareness among men is lower and they are less likely to assume a lump is breast cancer, which can cause a delay in seeking treatment. The majority of men diagnosed are over the age of 50. Male breast cancer can exhibit the same symptoms as breast cancer in women, including a lump. Anyone who notices anything unusual about their breasts, whether male or female, should contact their physician immediately

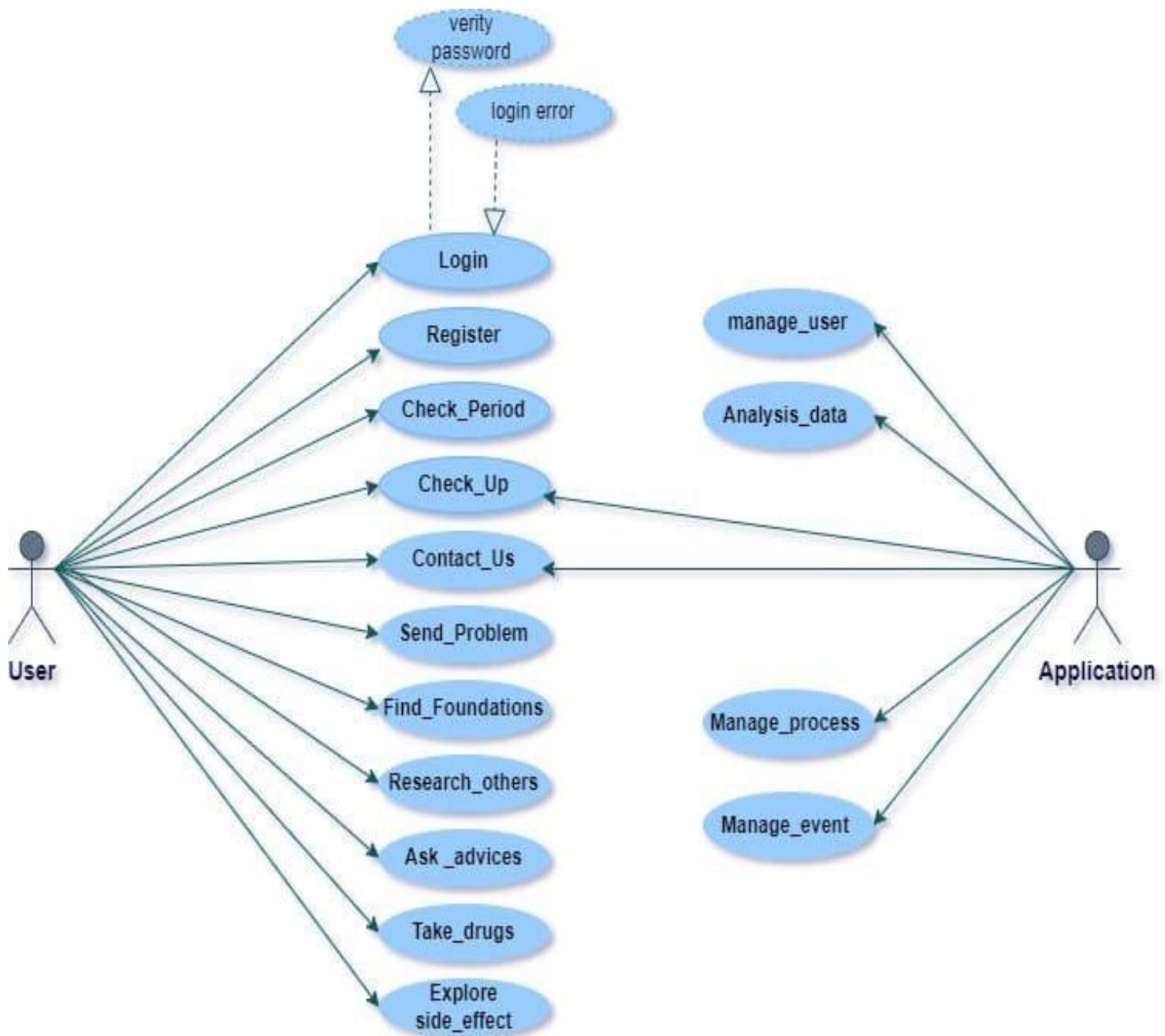


Chapter Seven

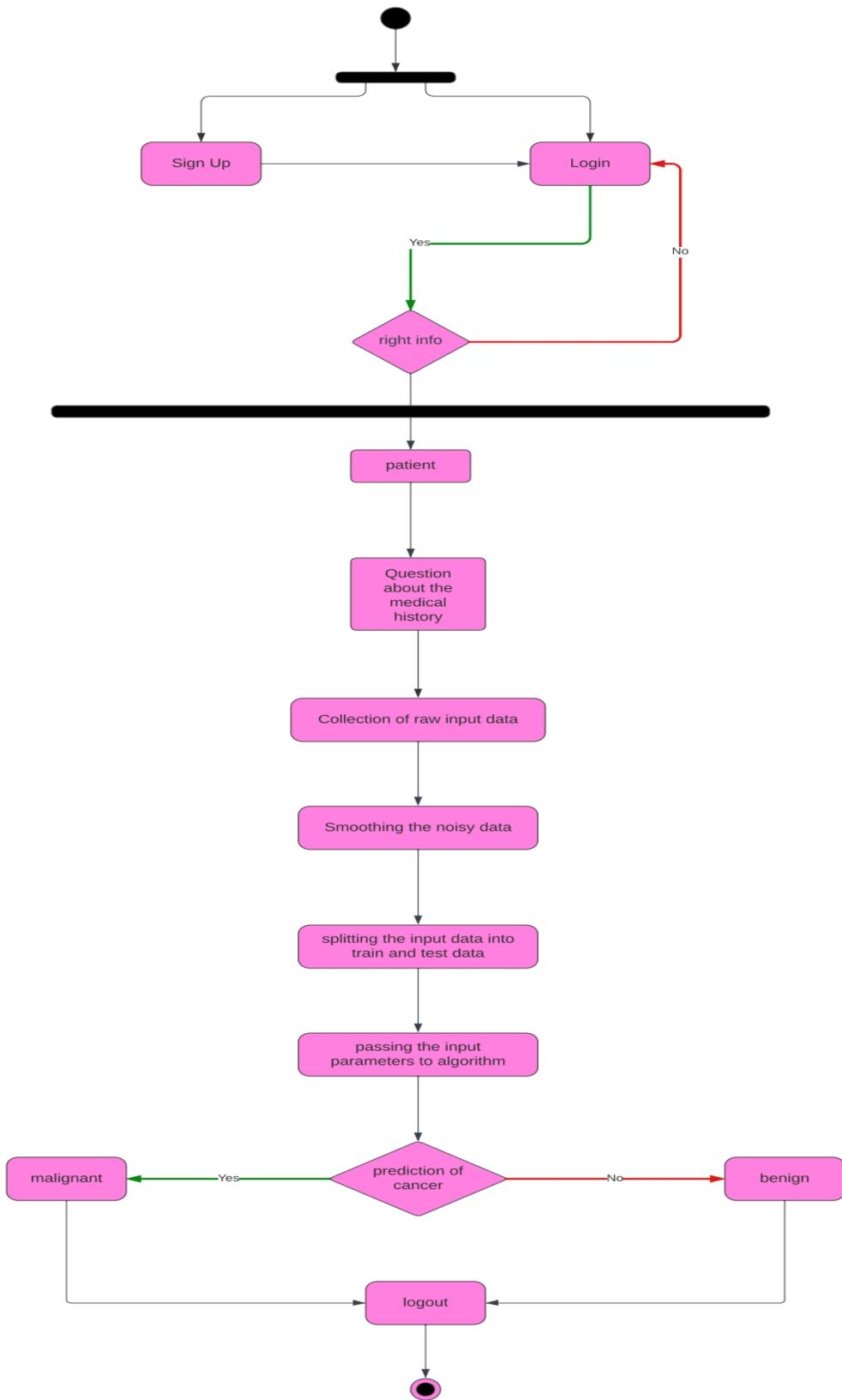
7.1. ERD



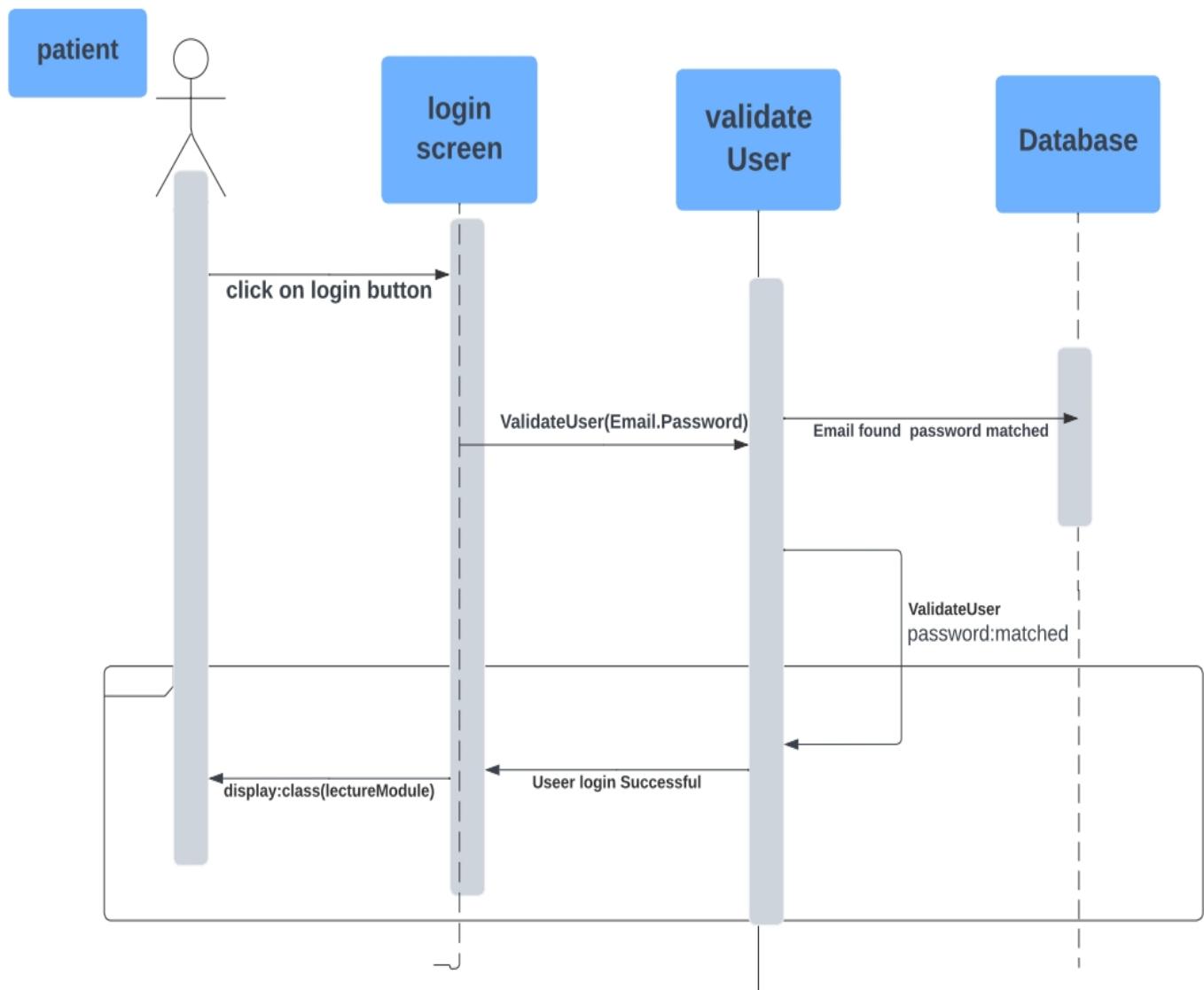
7.2 Use Case Diagram



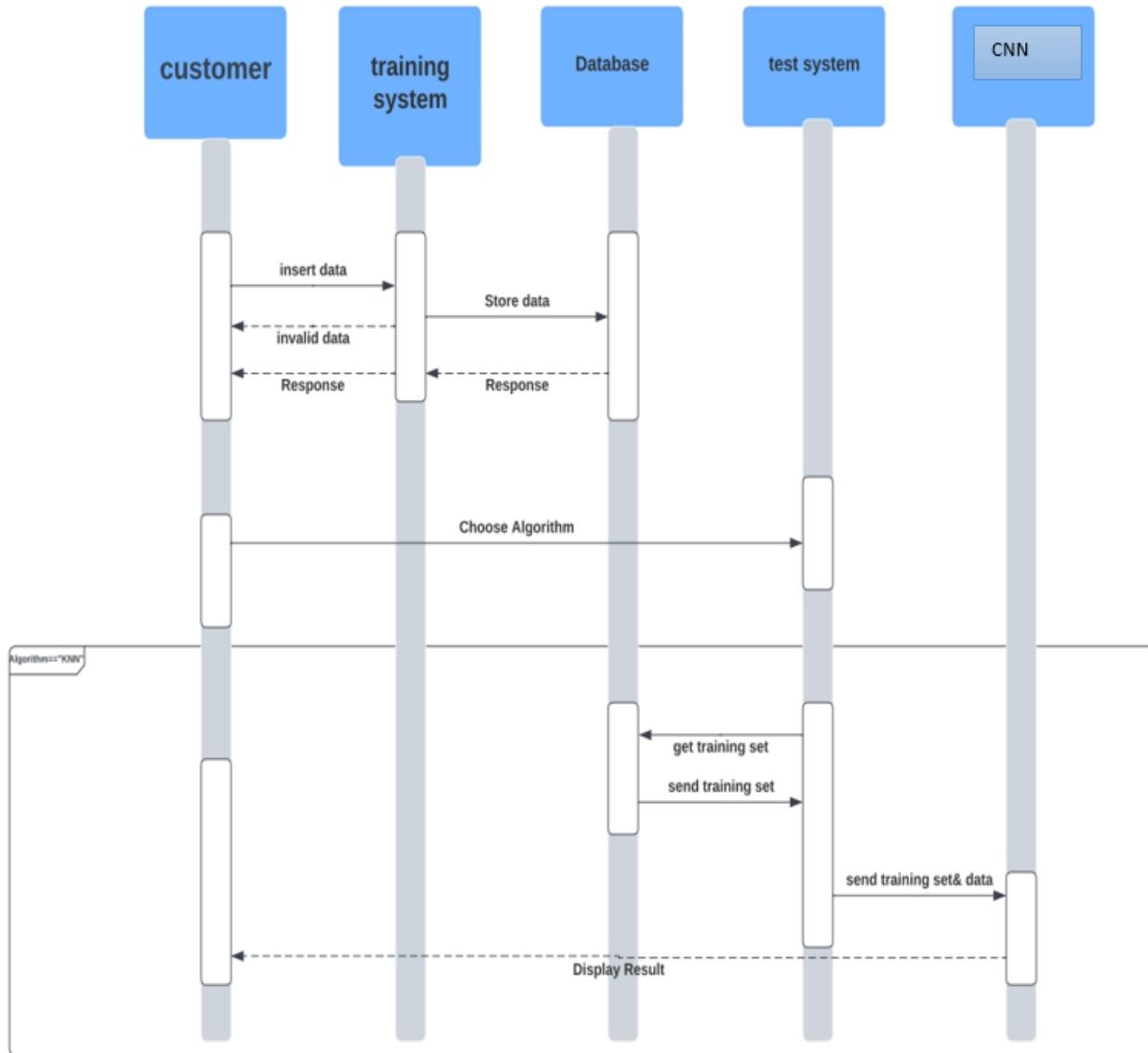
7.3Activity Diagram



7.4.1 Sequence Diagram



7.4.2 Sequence Diagram



7.5 Prototype

The prototype consists of several screens:

- Mammo Guard**: User registration screen with fields for Full Name, Email, Address, Password, and a Sign Up button.
- Mammo Guard**: Login screen with fields for Email, Password, and a Login button.
- Success Stories**: A screen featuring three stories: "Hind Bapkodi", "Lata", and "Huda". Each story includes a small profile picture and a short summary.
- Diagnosis**: A screen titled "A Triple Assessment" describing clinical examination, ultrasonography, and mammography. It includes icons for manual examination, ultrasound, and biopsy.
- Managing Stress**: A screen with tips for managing stress after diagnosis, including advice for talking to relatives, children, and partners.
- Talking to your Relatives**, **Talking to your Children**, **Talking to your Partner**: Sub-screens under the "Managing Stress" category providing specific guidance for each group.
- How to Deal**: A screen with general advice on how to deal with the diagnosis.
- Diagnosis**: A screen showing the "Ultrasonography" and "Biopsy" steps of the diagnostic process.
- Risk Factors**: A screen listing risk factors for breast cancer, such as heredity, lifestyle, age, obesity, pregnancy, diabetes, essential hypertension, and hormones, along with ways to reduce risk.
- Check Up**: An ultrasound image showing a malignant tumor. The prediction is "Malignant".
- Warning Signs**: A screen showing common warning signs like nipple discharge, lumping or thickening, and changes in skin color or texture.
- Self Examination**: A screen with instructions for performing a self-examination, including steps for Up and Down, Circles, and Nipple.
- Pages**: A navigation menu with links to Login, Sign Up, Home, Self Examination, Help, Check Up, How to Deal, Risk Factors, Diagnosis, and Settings.



Chapter Eight

8.1 Conclusion

Breast Cancer is most common among women over the age of forty, once they reach menopause, and if they have kids at an older age. it is the second leading cause of death among women in the U.S. Luckily, there are ways to prevent breast cancer. Some ways include performing physical activity weekly, not smoking, managing your weight, limiting drinking and not being exposed to radiation or pollution.

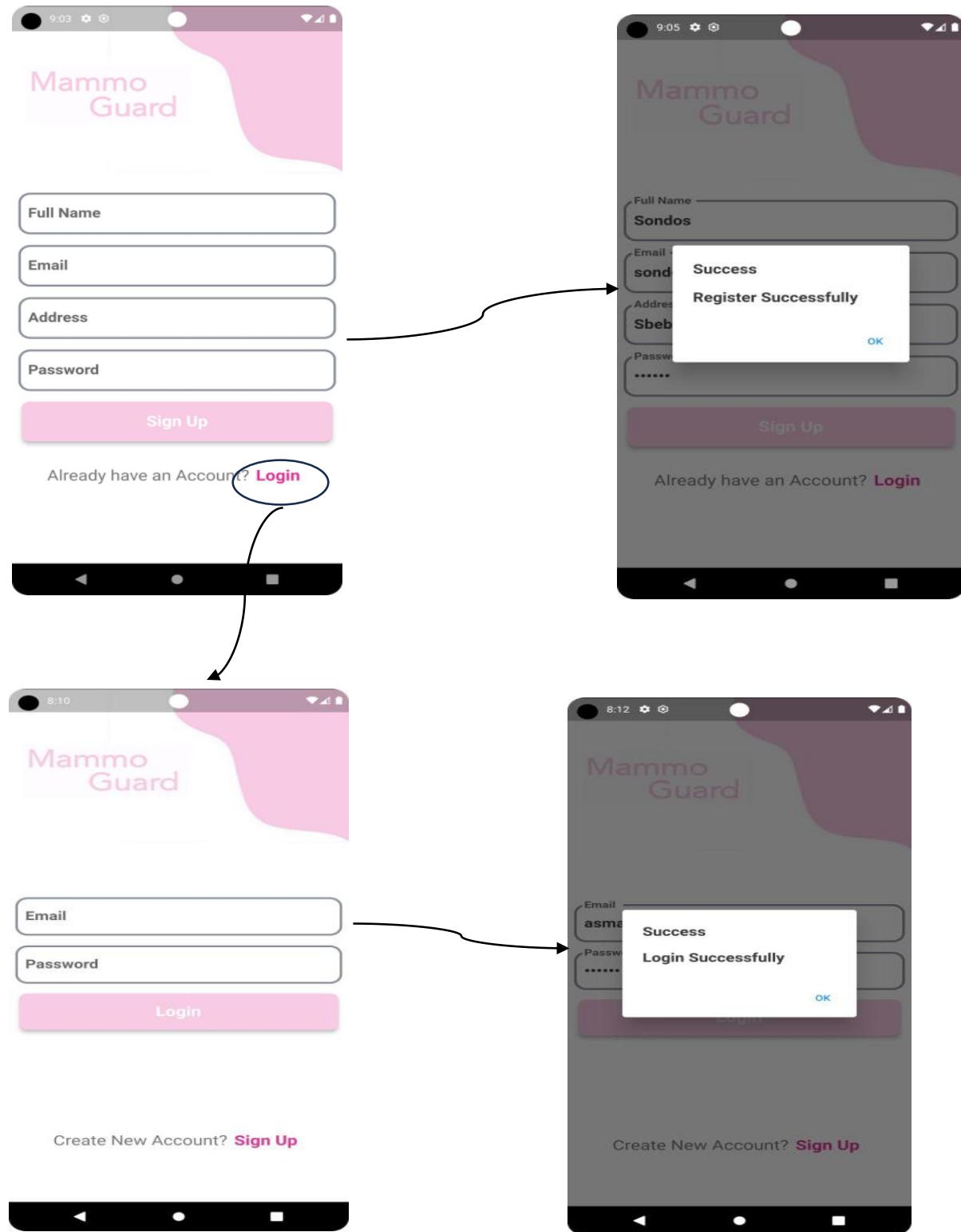
Ultimately, an increase in technology and medicines has increased the lifespan of cancer patients and helped them through their journey, as well as routine checkups that can reduce the risk of breast cancer.

It is important to realize that breast cancer is not an irrevocable sentence. There are better opportunities for prevention and treatment, which means we can tackle this disease more effectively than ever before. By following a healthy lifestyle, maintaining a healthy weight, and participating in regular physical activity, we can significantly reduce the risk of breast cancer. We cannot forget the role of periodic examinations, which help detect early problems and thus increase the chances of recovery.

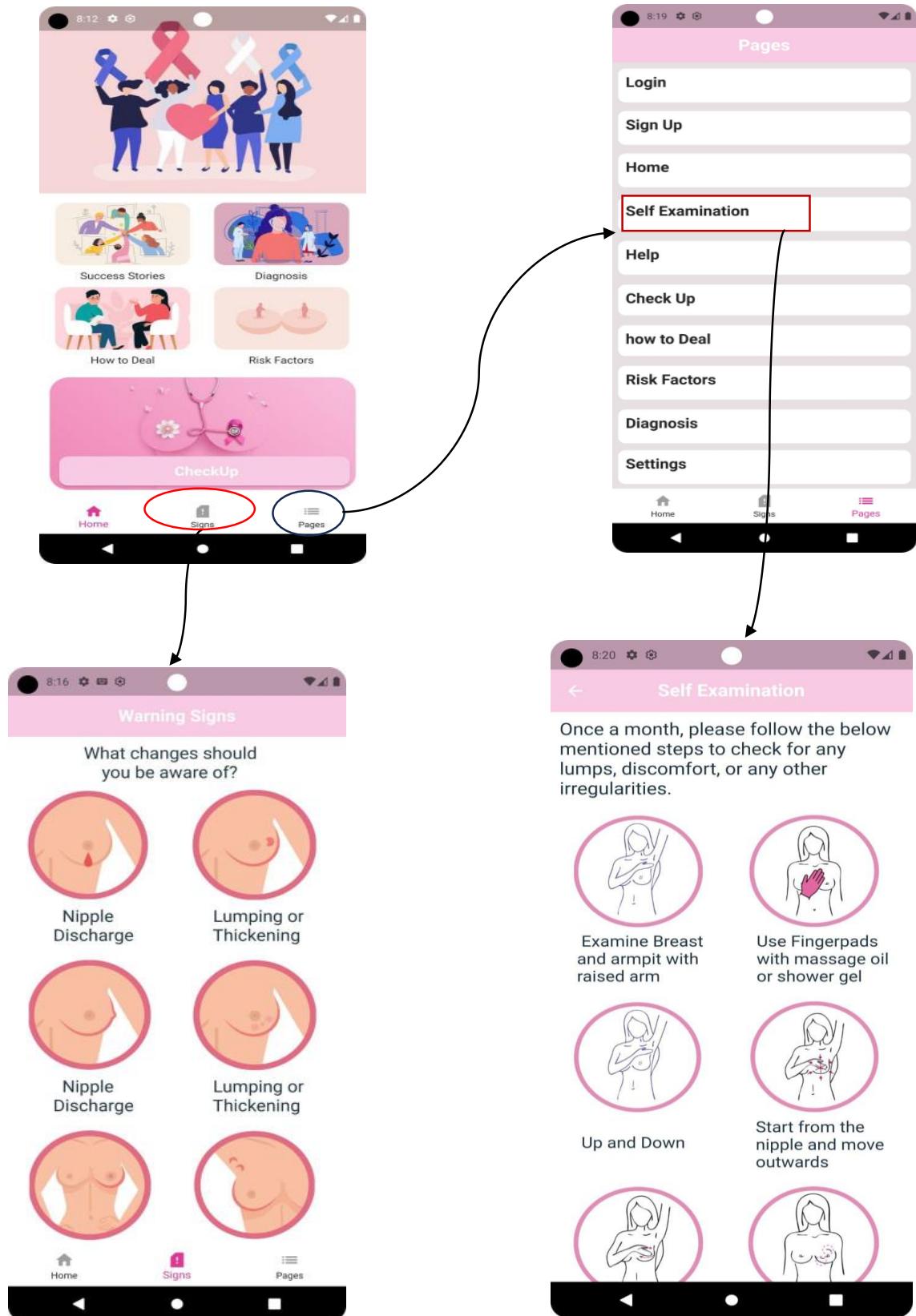
With the development of technology and medicines, we see that hope is always there, and patients can walk their journey with confidence and optimism. Continued research and awareness can contribute significantly to combating this disease and achieving progress in its treatment and prevention.

8.2 Layout

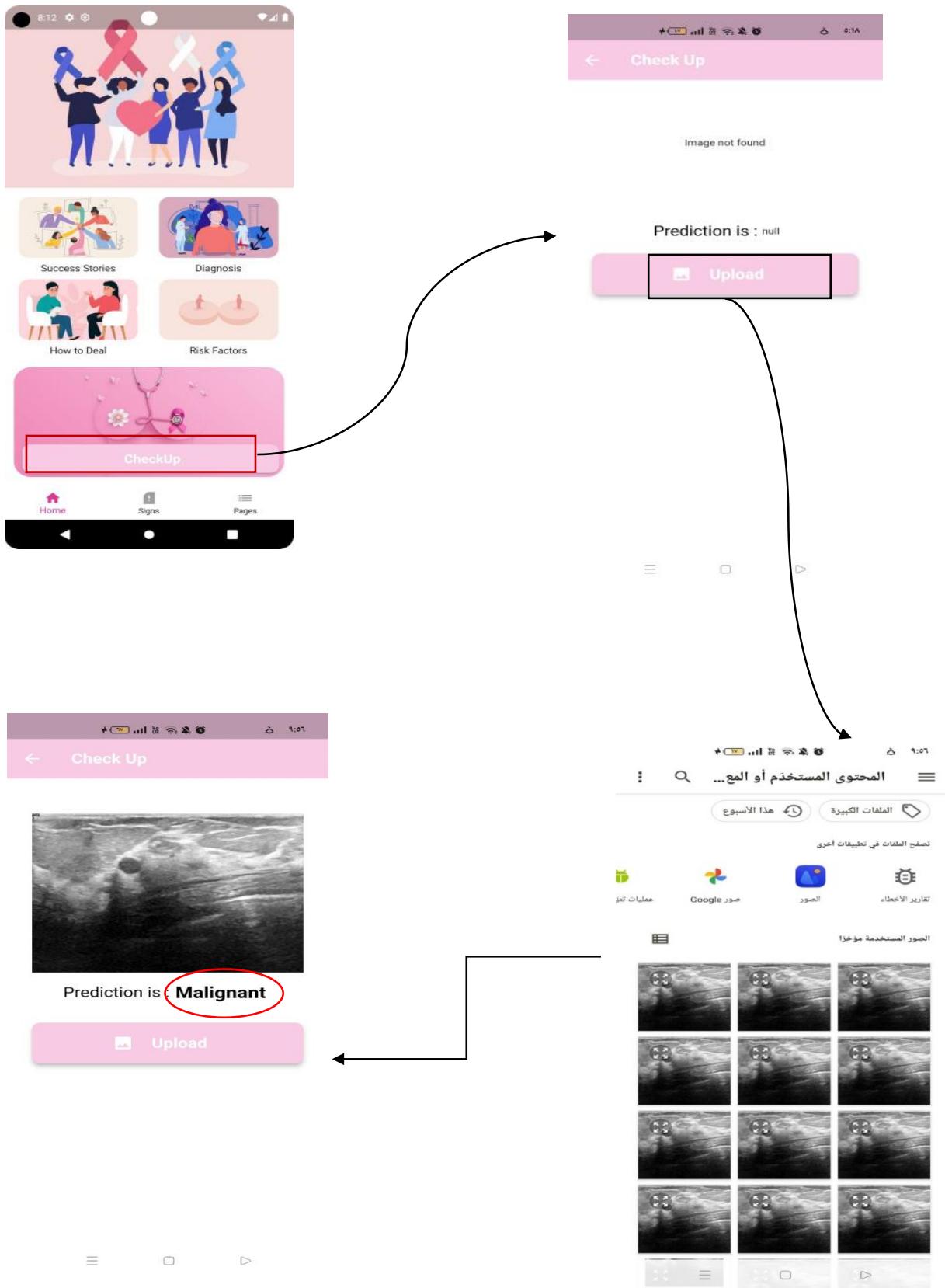
1. Register



2. Home



3.A Test X-RAY





A Triple Assessment

Clinical Examination, Ultrasonography plus Mammography and Ultrasound guided core needle biopsy of the lump can give definitive diagnosis of breast cancer in most instances.



Manual Examination



Ultrasonography



Biopsy

Apart from being aware of changes in the breast, it is advisable to have a Mammogram once every year, especially from the age of 40. Breast screening by way of Mammography is an effective proven way of detecting breast cancer many years before it shows up.



Breast Cancer



Heredity



Lifestyle



Age



Obesity



Pregnancy



Diabetes



Essential Hypertension



Hormones

Ways to reduce your Risk



Do no Smoke



Breastfeed





After receiving a breast cancer diagnosis, people need time to process their feelings and to figure out how to tell family and friends. Everyone's situation is unique, so it's important to do what feels right for you.



Talking to your Partner Talking to your Children



Talking to your Family and Friends about Breast Cancer



- Explaining to kids about a condition like Breast cancer is difficult, no matter what the age of the child is. But not being honest with them can do more harm than good.
- It's a good idea to plan what you're going to say in advance and schedule time so you won't be disturbed.
- Make them comfortable before bringing this up.
- Use simpler language.
- Tell them about the disease, and the kind of treatment you might go through.



Talking to your Relatives Managing Stress



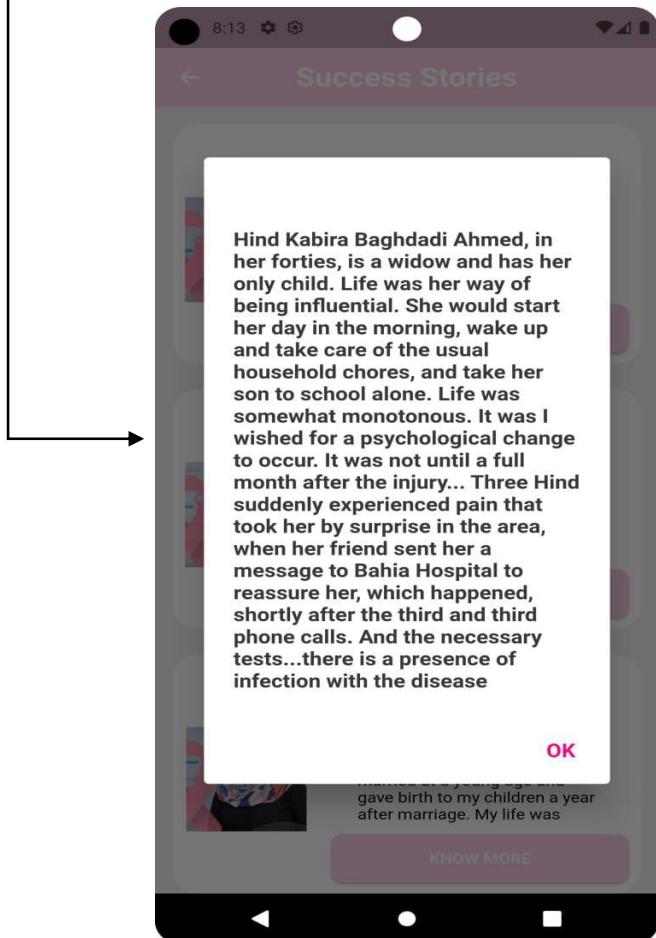
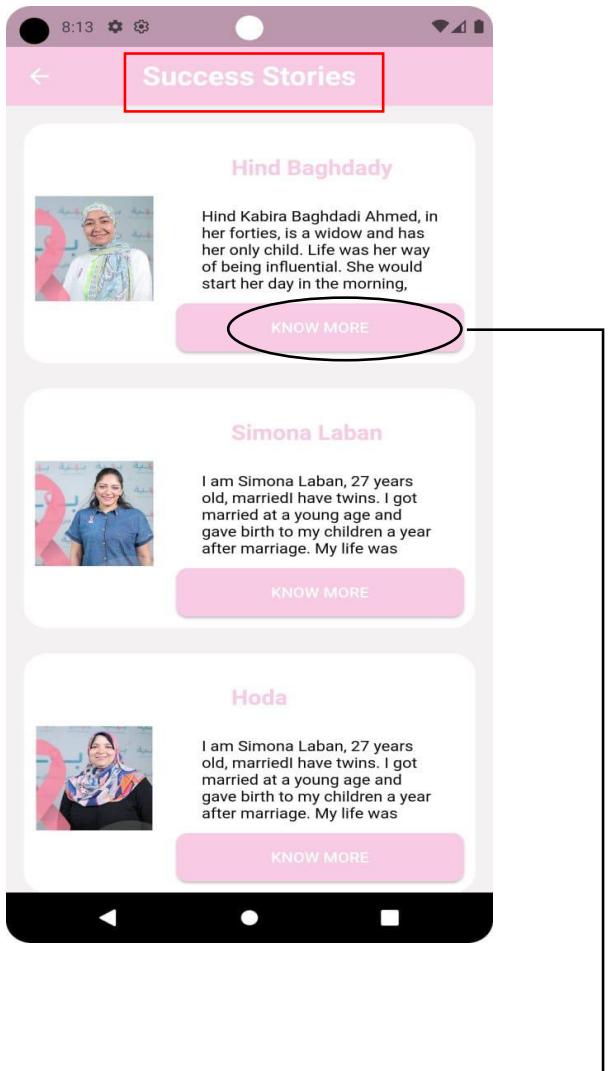
- Take some time to figure out who all to tell, how much to tell, how to tell (in person, over phone, group chat).
- Most relatives would be willing to help in any way possible. Let them know that you will reach out whenever you need them.
- Some person can take charge to inform others about all updates regarding your health.
- Be honest about your feelings with them as well.



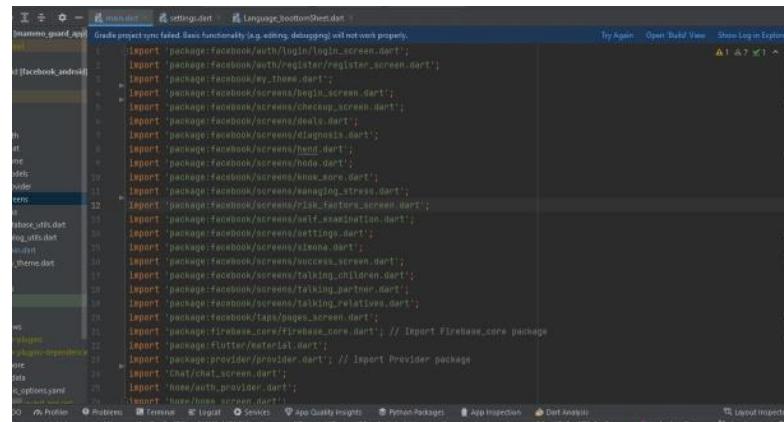
- As the patient, you need to focus on the most important aspect of your recovery - Mental Health.
- Physical, emotional, financial hardships often persist through and after the treatment.
- Side effects such as insomnia, memory changes and mood swings. Hormone level changes can influence your emotions, and weight gain can be discouraging.

Your Doctor may suggest consulting a Psychologist to help cope with the emotional stress related to your diagnosis.

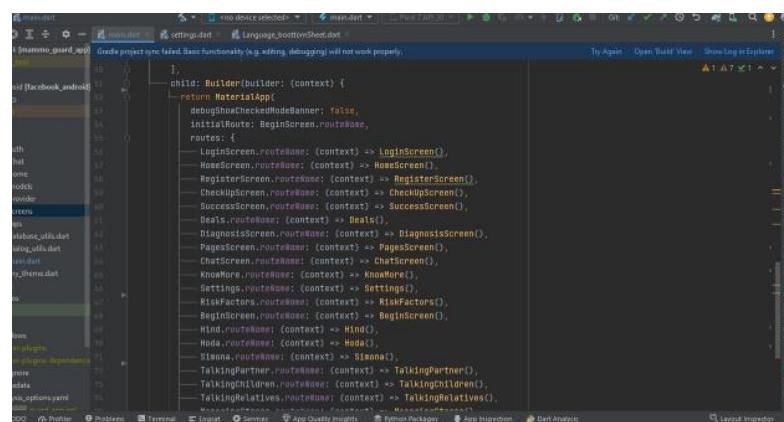




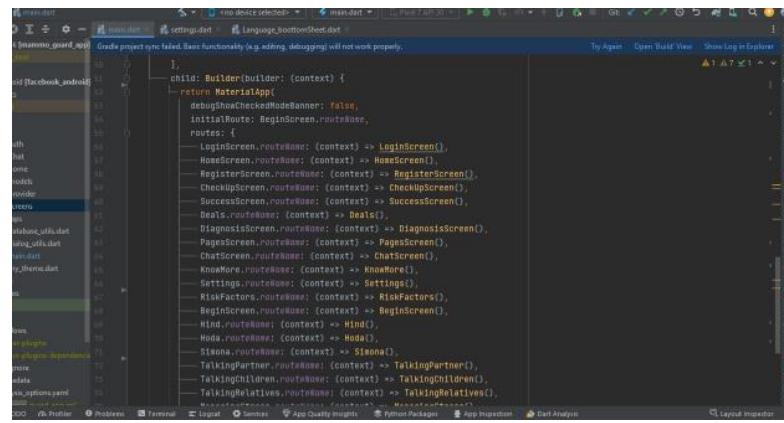
Main



```
import 'package:flutter/material.dart';
import 'package:facebook_android/auth/login/login_screen.dart';
import 'package:facebook_android/auth/register/register_screen.dart';
import 'package:facebook_android/themes.dart';
import 'package:facebook_android/screens/begin_screen.dart';
import 'package:facebook_android/screens/checkup_screen.dart';
import 'package:facebook_android/screens/deals.dart';
import 'package:facebook_android/screens/diagnosis.dart';
import 'package:facebook_android/screens/hand.dart';
import 'package:facebook_android/screens/home.dart';
import 'package:facebook_android/screens/info.dart';
import 'package:facebook_android/screens/management_trust.dart';
import 'package:facebook_android/screens/risk_factors.dart';
import 'package:facebook_android/screens/settings.dart';
import 'package:facebook_android/screens/talking_children.dart';
import 'package:facebook_android/screens/talking_partner.dart';
import 'package:facebook_android/screens/talking_relatives.dart';
import 'package:facebook_android/widgets/pages_screen.dart';
import 'package:firebase_core/firebase_core.dart'; // Import Firebase_core package
import 'package:provider/provider.dart';
import 'Chat/chat_screen.dart';
import 'home/provider.dart';
import 'home/provider.dart' as provider;
```



```
child: Builder(builder: (context) {
  return MaterialApp(
    debugShowCheckedModeBanner: false,
    initialRoute: BeginScreen.routeName,
    routes: {
      LoginScreen.routeName: (context) => LoginScreen(),
      HomeScreen.routeName: (context) => HomeScreen(),
      RegisterScreen.routeName: (context) => RegisterScreen(),
      CheckupScreen.routeName: (context) => CheckupScreen(),
      SuccessScreen.routeName: (context) => SuccessScreen(),
      Deals.routeName: (context) => Deals(),
      DiagnosisScreen.routeName: (context) => DiagnosisScreen(),
      PagesScreen.routeName: (context) => PagesScreen(),
      ChatScreen.routeName: (context) => ChatScreen(),
      KnowMore.routeName: (context) => KnowMore(),
      Settings.routeName: (context) => Settings(),
      RiskFactors.routeName: (context) => RiskFactors(),
      BeginScreen.routeName: (context) => BeginScreen(),
      Hand.routeName: (context) => Hand(),
      Hoda.routeName: (context) => Hoda(),
      Saima.routeName: (context) => Saima(),
      TalkingPartner.routeName: (context) => TalkingPartner(),
      TalkingChildren.routeName: (context) => TalkingChildren(),
      TalkingRelatives.routeName: (context) => TalkingRelatives(),
    },
  );
});
```



```
child: Builder(builder: (context) {
  return MaterialApp(
    debugShowCheckedModeBanner: false,
    initialRoute: BeginScreen.routeName,
    routes: {
      LoginScreen.routeName: (context) => LoginScreen(),
      HomeScreen.routeName: (context) => HomeScreen(),
      RegisterScreen.routeName: (context) => RegisterScreen(),
      CheckupScreen.routeName: (context) => CheckupScreen(),
      SuccessScreen.routeName: (context) => SuccessScreen(),
      Deals.routeName: (context) => Deals(),
      DiagnosisScreen.routeName: (context) => DiagnosisScreen(),
      PagesScreen.routeName: (context) => PagesScreen(),
      ChatScreen.routeName: (context) => ChatScreen(),
      KnowMore.routeName: (context) => KnowMore(),
      Settings.routeName: (context) => Settings(),
      RiskFactors.routeName: (context) => RiskFactors(),
      BeginScreen.routeName: (context) => BeginScreen(),
      Hand.routeName: (context) => Hand(),
      Hoda.routeName: (context) => Hoda(),
      Saima.routeName: (context) => Saima(),
      TalkingPartner.routeName: (context) => TalkingPartner(),
      TalkingChildren.routeName: (context) => TalkingChildren(),
      TalkingRelatives.routeName: (context) => TalkingRelatives(),
    },
  );
});
```

Connect Firebase

```

static void showMessage(
    BuildContext context,
    String message,
    String title = 'Title',
    String? posActionName,
    VoidCallback? posAction,
    String? negActionName,
    VoidCallback? negAction,
) {
    List<Widget> actions = [];
    if (posActionName != null) {
        actions.add(
            TextButton(
                onPressed: () {
                    Navigator.pop(context);
                    posAction?.call();
                },
                child: Text(posActionName),
            ), // TextButton
        );
    }
    if (negActionName != null) {
        actions.add(
            TextButton(
                onPressed: () {
                    Navigator.pop(context);
                    negAction?.call();
                },
                child: Text(negActionName),
            ), // TextButton
        );
    }
    showDialog(
        context: context,
        builder: (context) {
            return AlertDialog(
                content: Text(message),
                title: Text(title),
                actions: actions,
                titleTextStyle: Theme.of(context).textTheme.titleMedium); // AlertDialog
        });
}

return FirebaseFirestore.instance
    .collection(Message.collectionName)
    .doc(Message.collectionName)
    .withConverter<Message>(
        fromFirestore: (snapshot, options) =>
            Message.fromFirestore(snapshot.data()),
        toFirestore: (user, options) => user.toFirestore(),
    );
}

static Future<void> addMessageToFireStore(Message message) {
    return getMessageCollection(message.id).doc(message.id).set(message);
}

static Future<Message> readMessageFromFireStore(String sid) async {
    var querySnapshot = await getMessageCollection(sid).doc(sid).get();
    return querySnapshot.data();
}

static Future<void> addUserToFireStore(MyUser user) {
    return getUserCollection().doc(user.id).set(user);
}

```



```

mammal_guard_app
drake project sync failed. Basic functionality (e.g. editing, debugging) will not work properly.
Try Again Open Build View Show Log in Explorer
1 import 'package:flutter/material.dart';
2
3 class CustomTextFormField extends StatelessWidget {
4     String label;
5     TextInputType keyboardType;
6     TextEditingController controller;
7     bool obscureText;
8     String? Function(String)? validator;
9
10    CustomTextFormField({
11        super.key,
12        required this.label,
13        required this.keyboardType,
14        required this.controller,
15        this.obscureText = false,
16        required this.validator});
17
18    @override
19    Widget build(BuildContext context) {
20        return Padding(
21            padding: const EdgeInsets.all(8.0),
22            child: TextFormField(
23                decoration: InputDecoration(
24                    label: Text(label),
25                    enabledBorder: OutlineInputBorder(
26                        borderRadius: BorderRadius.circular(15),
27                        borderSide: BorderSide(
28                            color: Theme.of(context).primaryColor,
29                            width: 3,
30                        ), // BorderSide
31                    ), // OutlineInputBorder
32                    focusedBorder: OutlineInputBorder(
33                        borderRadius: BorderRadius.circular(15),
34                        borderSide: BorderSide(
35                            color: Theme.of(context).primaryColor,
36                            width: 3,
37                        ), // BorderSide
38                    ), // OutlineInputBorder
39                    keyboardType: keyboardType,
40                    controller: controller,
41                    obscureText: obscureText,
42                    validator: validator,
43                ), // TextFormField
44            ); // Padding
45    }
46}

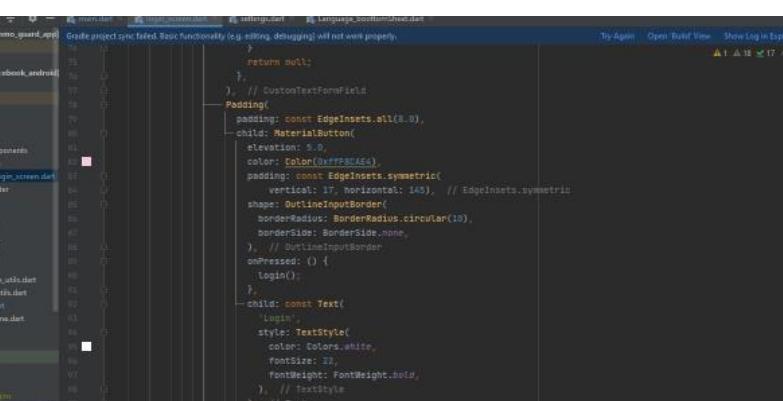
```

```
1: import 'package:facebook/database_utils.dart';
2: import 'package:firebase_auth/firebase_auth.dart';
3: import 'package:flutter/material.dart';
4: import 'dart:io';
5: import 'models/my_user.dart';
6:
7: class UserProvider extends ChangeNotifier {
8:   MyUser? user;
9:   User? firebaseUser;
10:
11:   UserProvider() {
12:     firebaseUser = FirebaseAuth.instance.currentUser;
13:     initUser();
14:   }
15:
16:   initUser() async {
17:     if(firebaseUser != null) {
18:       user = await DatabaseUtils.getUser(firebaseUser.uid ?? '');
19:     }
20:   }
21: }
```

```
1: class DialogUtils {
2:   static void showLoading(BuildContext context, String message) {
3:     showDialog(
4:       barrierDismissible: false,
5:       context: context,
6:       builder: (context) {
7:         return AlertDialog(
8:           content: Row(
9:             mainAxisAlignment: MainAxisAlignment.spaceEvenly,
10:             children: [
11:               const CircularProgressIndicator(),
12:               const SizedBox(
13:                 width: 12,
14:               ),
15:               Text(message),
16:             ],
17:           );
18:         ); // Row
19:       }, // AlertDialog
20:     );
21:   }
22:
23:   static void hideLoading(BuildContext context) {
24:     Navigator.pop(context);
25:   }
26: }
```

```
1: class MyUser {
2:   static const String collectionName = 'users';
3:   String id;
4:   String name;
5:   String email;
6:
7:   MyUser({required this.id, required this.name, required this.email});
8:
9:   MyUser.fromFireStore(Map<String, dynamic> data)
10:   : this(
11:     id: data['id'],
12:     name: data['name'],
13:     email: data['email'],
14:   );
15:
16:   Map<String, dynamic> toFireStore() {
17:     return {
18:       'id': id,
19:       'name': name,
20:       'email': email,
21:     };
22:   }
23: }
```

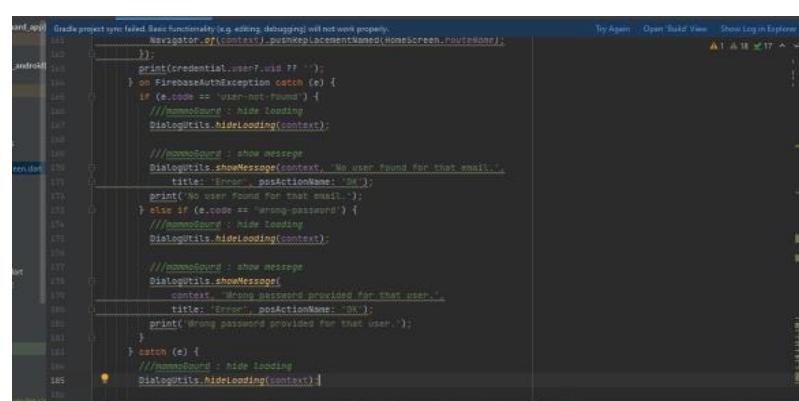
Login



```

    child: const Text(
      'Login',
      style: TextStyle(
        color: Colors.white,
        fontSize: 22,
        fontWeight: FontWeight.bold,
      ),
    ),
  ),
)

```



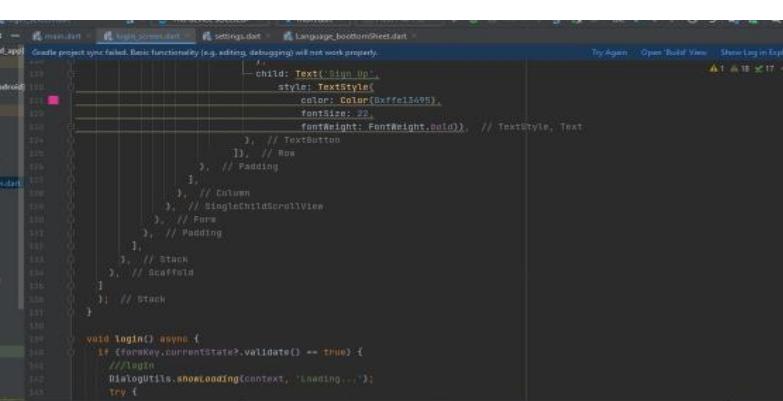
```

    if (e.code == 'user-not-found') {
      //noUserFound : hide Loading
      Dialogutils.hideLoading(context);

      //noUserFound : show message
      Dialogutils.showMessage(context, 'No user found for that email...', title: 'Error', posActionName: 'OK');
    } else if (e.code == 'wrong-password') {
      //noUserFound : hide Loading
      Dialogutils.hideLoading(context);

      //noUserFound : show message
      Dialogutils.showMessage(
        context, 'Wrong password provided for that user...',
        title: 'Error', posActionName: 'OK');
    }
  }
}

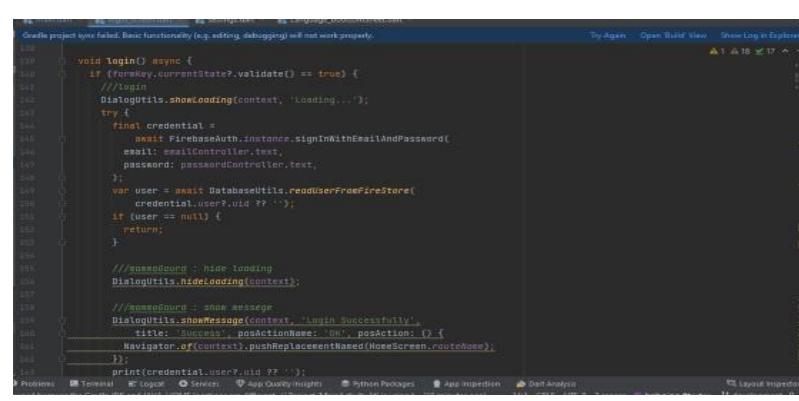
```



```

    child: Text('Sign Up'),
    style: TextStyle(
      color: Color(0xffefefef),
      fontSize: 20,
      fontWeight: FontWeight.normal,
    ),
  ),
)

```



```

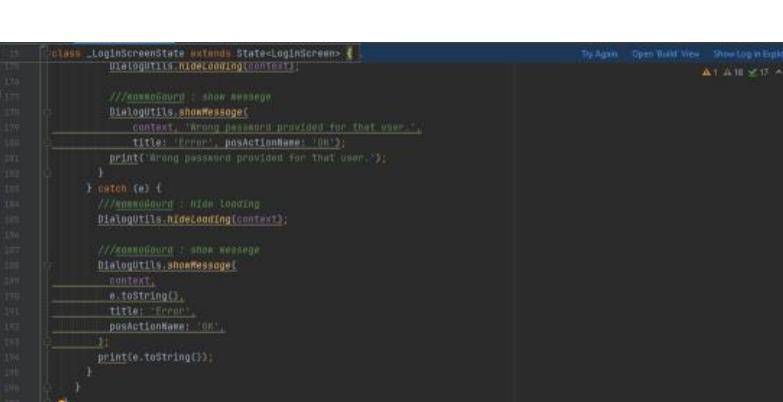
void login() async {
  if (!formKey.currentState?.validate() == true) {
    //Toast
    Dialogutils.showLoading(context, 'Loading...');
    try {
      final credential =
        await FirebaseAuth.instance.signInWithEmailAndPassword(
          email: emailController.text,
          password: passwordController.text,
        );
      var user = await DatabaseUtils.readUserFromFireStore(
        credential.user.uid ?? '',
      );
      if (user == null) {
        return;
      }

      //noUserFound : hide loading
      Dialogutils.hideLoading(context);

      //noUserFound : show message
      Dialogutils.showMessage(context, 'Login Successfully',
        title: 'Success', posActionName: 'OK', posAction: () {
          Navigator.of(context).pushReplacementNamed(HomeScreen.routeName);
        });
      print('User ID: ${credential.user.id ?? ''}');
    } catch (e) {
      //noUserFound : hide loading
      Dialogutils.hideLoading(context);

      //noUserFound : show message
      Dialogutils.showMessage(
        context, e.toString(),
        title: 'Error',
        posActionName: 'OK',
      );
      print(e.toString());
    }
  }
}

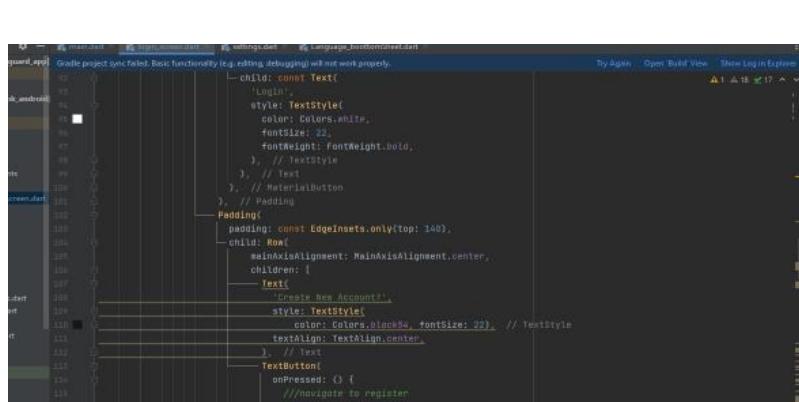
```



```

    child: const Text(
      'Create New Account',
      style: TextStyle(
        color: Colors.brown500,
        fontSize: 20,
        textAlign: TextAlign.center,
      ),
    ),
  ),
)

```



```

    child: const Text(
      'Register',
      style: TextStyle(
        color: Colors.brown500,
        fontSize: 20,
        textAlign: TextAlign.center,
      ),
    ),
  ),
)

```

This screenshot shows the code for the login screen in a Flutter application. The code uses a Scaffold with an AppBar and a body containing a Stack with padding and a Form. The Form contains two CustomTextFormField fields for email and password, each with its own validation logic.

```
    ), // Image.asset
  ),
  Scaffold(
    backgroundColor: Colors.transparent,
    appBar: AppBar(
      backgroundColor: Colors.transparent,
      elevation: 0,
    ), // AppBar
    body: Stack(
      children: [
        Padding(
          padding: const EdgeInsets.only(top: 220),
          child: Form(
            key: formKey,
            child: SingleChildScrollView(
              child: Column(
                crossAxisAlignment: CrossAxisAlignment.stretch,
                children: [
                  CustomTextFormField(
                    label: 'Email',
                    keyboardType: TextInputType.emailAddress,
                    controller: emailController,
                    validator: (text) {
                      if (text == null || text.trim().isEmpty) {
                        return 'Please enter Email Address';
                      }
                    },
                    inputFormatters: [LengthLimitTextInputFormatter(100)],
                  ),
                ],
              ),
            ),
          ),
        ),
      ],
    ),
  );
}
```

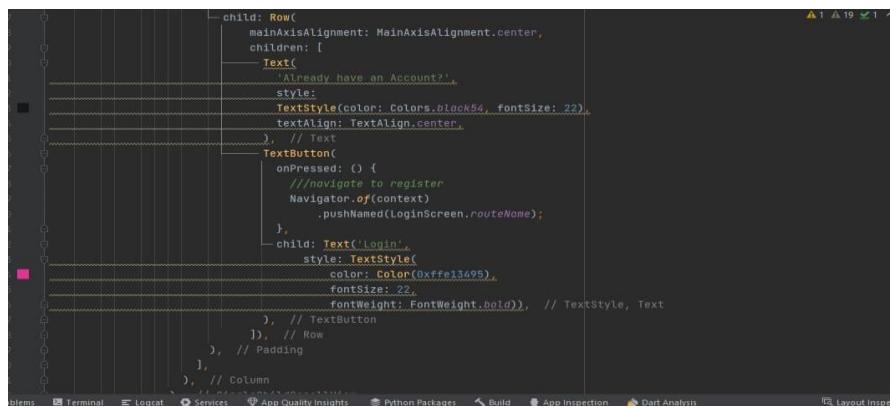
This screenshot shows the validation logic for the password field. It checks if the password is null or empty, and if its length is less than 6 characters. It also includes a regular expression for validating the password format.

```
        if (text == null || text.trim().isEmpty) {
          return 'Please enter Password';
        }
        if (text.length < 6) {
          return 'Password should be at least 6 chars.';
        }
        return null;
      },
    ), // CustomTextFormField
  );
}
```

This screenshot shows the creation of the `_LoginScreenState` state for the login screen. It initializes TextEditingController variables for email and password, and sets up a GlobalKey for form validation.

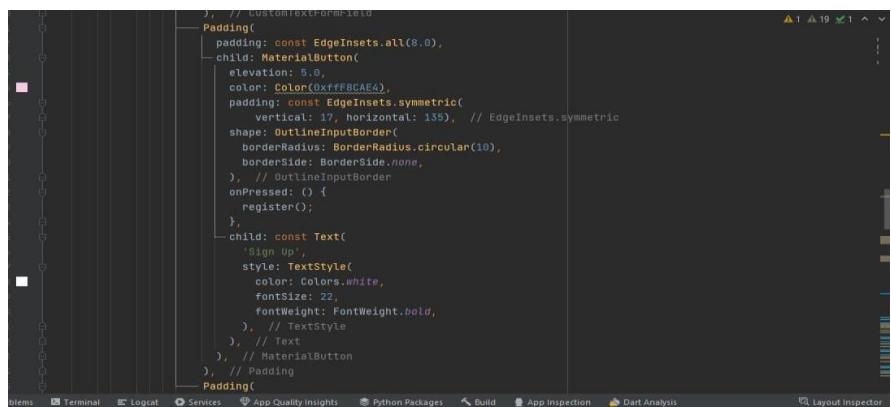
```
class _LoginScreenState extends State<LoginScreen> {
  var emailController = TextEditingController(text: '');
  var passwordController = TextEditingController(text: '');
  var formKey = GlobalKey<FormState>();
  @override
  Widget build(BuildContext context) {
    return Stack(
      children: [
        Container(
          color: Colors.white,
        ),
        Center(
          child: Image.asset('assets/logo.png'),
        ),
      ],
    );
  }
}
```

Register



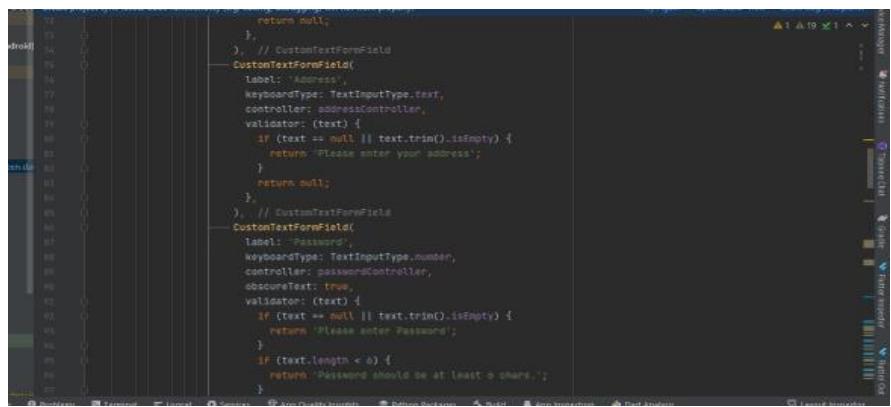
```
child: Row(
    mainAxisAlignment: MainAxisAlignment.center,
    children: [
        Text(
            'Already have an Account?',
            style: TextStyle(color: Colors.black54, fontSize: 22),
            textAlign: TextAlign.center,
        ),
        TextButton(
            onPressed: () {
                //navigate to register
                Navigator.of(context)
                    .pushNamed(LoginScreen.routeName);
            },
            child: Text('Login',
                style: TextStyle(
                    color: Color(0xffe13495),
                    fontSize: 22,
                    fontWeight: FontWeight.bold)),
            ), // Text
        ],
    ), // Row
), // Padding
], // Column
), // Column
```

This screenshot shows the code for the 'Register' screen. It consists of a vertical column containing a row with centered text and a text button, followed by padding and another column.



```
); // CustomTextFormField
Padding(
    padding: const EdgeInsets.all(8.0),
    child: MaterialButton(
        elevation: 5.0,
        color: Color(0xffFBCAF4),
        padding: const EdgeInsets.symmetric(
            vertical: 17, horizontal: 15), // EdgeInsets.symmetric
        shape: OutlineInputBorder(
            borderRadius: BorderRadius.circular(10),
            borderSide: BorderSide.none,
        ), // OutlineInputBorder
        onPressed: () {
            register();
        },
        child: const Text(
            'Sign Up',
            style: TextStyle(
                color: Colors.white,
                fontSize: 22,
                fontWeight: FontWeight.bold,
            ), // TextStyle
        ), // Text
    ), // MaterialButton
), // Padding
Padding(  
); // CustomTextFormField
```

This screenshot shows the code for the registration form. It includes a padding block containing a material button with a specific color and shape, and a text field with a white font and bold weight.



```
return null;
},
), // CustomTextFormField
CustomTextFormField(
label: 'Address',
keyboardType: TextInputType.text,
controller: addressController,
validator: (text) {
    if (text == null || text.trim().isEmpty) {
        return 'Please enter your address';
    }
    return null;
},
), // CustomTextFormField
CustomTextFormField(
label: 'Password',
keyboardType: TextInputType.number,
controller: passwordController,
obscureText: true,
validator: (text) {
    if (text == null || text.trim().isEmpty) {
        return 'Please enter Password';
    }
    if (text.length < 6) {
        return 'Password should be at least 6 char.';
```

This screenshot shows the validation logic for the address and password fields. The address field requires a non-empty text input, while the password field requires a minimum length of 6 characters.

Gradle project sync failed: Basic functionality (e.g. editing, debugging) will not work properly.

```

class RegisterScreen extends StatefulWidget {
  static const String routeName = 'register screen';
  const RegisterScreen({super.key});
  @override
  State<RegisterScreen> createState() => _RegisterScreenState();
}

class _RegisterScreenState extends State<RegisterScreen> {
  final GlobalKey<FormState> formKey = GlobalKey<FormState>();
  final TextEditingController nameController = TextEditingController(text: '');
  final TextEditingController emailController = TextEditingController(text: '');
  final TextEditingController passwordController = TextEditingController(text: '');
  final TextEditingController addressController = TextEditingController(text: '');
  final GlobalKey<FormField> formKey = GlobalKey<FormField>();

  @override
  Widget build(BuildContext context) {
    return Stack(
      children: [
        Container(
          color: Colors.white,
        ),
        Scaffold(
          backgroundColor: Colors.transparent,
          appBar: AppBar(),
          backgroundColor: Colors.transparent,
          elevation: 0,
        ),
        body: Stack(
          children: [
            Padding(
              padding: const EdgeInsets.only(top: 160),
            ),
            Form(
              key: formKey,
              child: SingleChildScrollView(
                child: Column(
                  children: [
                    CustomTextFormField(
                      label: 'Full Name',
                      controller: nameController,
                      validator: (text) {
                        if (text == null || text.trim().isEmpty) {
                          return 'Please enter Full Name';
                        }
                        return null;
                      },
                    ),
                    CustomTextFormField(
                      label: 'Email',
                      keyboardType: TextInputType.emailAddress,
                      controller: emailController,
                      validator: (text) {
                        if (text == null || text.trim().isEmpty) {
                          return 'Please enter Email Address';
                        }
                        bool emailValid = RegExp(
                          r'^[a-zA-Z0-9.a-zA-Z0-9]+@[a-zA-Z0-9]+\.[a-zA-Z]*$'
                        ).hasMatch(text);
                        if (!emailValid) {
                          return 'Please enter a valid Email';
                        }
                        return null;
                      },
                    ),
                  ],
                ),
              ),
            ),
          ],
        ),
      ],
    );
  }
}

```

Try Again Open Build View Show Log in Explorer ▲ △ 19 ✎ 1

Gradle project sync failed: Basic functionality (e.g. editing, debugging) will not work properly.

```

void register() async {
  if (formKey.currentState?.validate() == true) {
    // todo : show loading
    DialogUtils.showLoading(context, 'Loading...');
    try {
      final credential =
          await FirebaseAuth.instance.createUserWithEmailAndPassword(
        email: emailController.text,
        password: passwordController.text,
      );
      MyUser myUser = MyUser(
        id: credential.user?.uid ?? '',
        name: nameController.text,
        email: emailController.text,
      );
      await DatabaseUtils.addUserToFireStore(myUser);

      // todo : hide loading
      DialogUtils.hideLoading(context);

      // todo : show message
      DialogUtils.showMessage(context, 'Register Successfully',
          title: 'Success', posActionName: 'OK', posAction: () {
        Navigator.of(context).pushReplacementNamed(HomeScreen.routeName);
      });
    } catch (e) {
      print(e);
    }
  }
}

```

Try Again Open Build View Show Log in Explorer ▲ △ 19 ✎ 1

Gradle project sync failed: Basic functionality (e.g. editing, debugging) will not work properly.

```

import 'package:facebook_auth/controller/text_form_field.dart';
import 'package:facebook_auth/login/login_screen.dart';
import 'package:flutter/material.dart';
import 'package:facebook_database_utils/utils.dart';
import 'package:facebook_login/my_user.dart';
import 'package:firebase_auth/firebase_auth.dart';
import 'package:flutter/material.dart';
import 'package:facebook/auth/firebase_auth.dart';
import 'package:facebook/auth/firebase_auth.dart';

class RegisterScreen extends StatefulWidget {
  static const String routeName = 'register screen';
  const RegisterScreen({super.key});
  @override
  State<RegisterScreen> createState() => _RegisterScreenState();
}

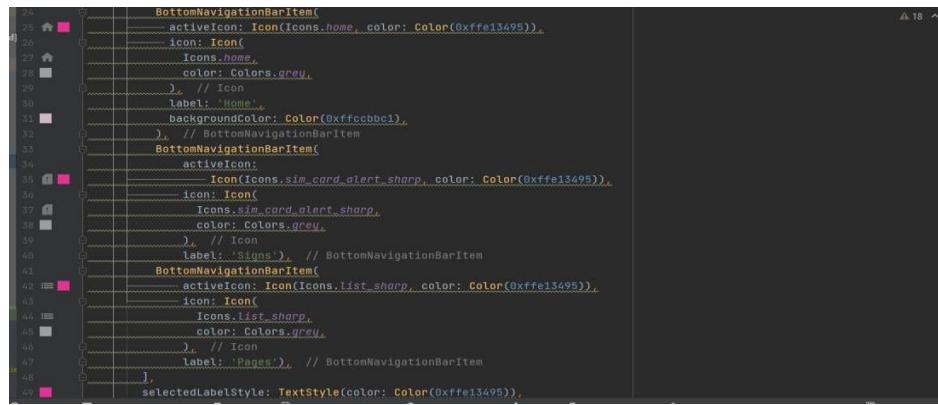
class _RegisterScreenState extends State<RegisterScreen> {
  final GlobalKey<FormState> formKey = GlobalKey<FormState>();
  final TextEditingController nameController = TextEditingController(text: '');
  final TextEditingController emailController = TextEditingController(text: '');
  final TextEditingController passwordController = TextEditingController(text: '');
  final TextEditingController addressController = TextEditingController(text: '');
  final GlobalKey<FormField> formKey = GlobalKey<FormField>();

  @override
  Widget build(BuildContext context) {
    return Stack(
      children: [
        Container(
          color: Colors.white,
        ),
        Scaffold(
          backgroundColor: Colors.transparent,
          appBar: AppBar(),
          backgroundColor: Colors.transparent,
          elevation: 0,
        ),
        body: Stack(
          children: [
            Padding(
              padding: const EdgeInsets.only(top: 160),
            ),
            Form(
              key: formKey,
              child: SingleChildScrollView(
                child: Column(
                  children: [
                    CustomTextFormField(
                      label: 'Full Name',
                      controller: nameController,
                      validator: (text) {
                        if (text == null || text.trim().isEmpty) {
                          return 'Please enter Full Name';
                        }
                        return null;
                      },
                    ),
                    CustomTextFormField(
                      label: 'Email',
                      keyboardType: TextInputType.emailAddress,
                      controller: emailController,
                      validator: (text) {
                        if (text == null || text.trim().isEmpty) {
                          return 'Please enter Email Address';
                        }
                        bool emailValid = RegExp(
                          r'^[a-zA-Z0-9.a-zA-Z0-9]+@[a-zA-Z0-9]+\.[a-zA-Z]*$'
                        ).hasMatch(text);
                        if (!emailValid) {
                          return 'Please enter a valid Email';
                        }
                        return null;
                      },
                    ),
                  ],
                ),
              ),
            ),
          ],
        ),
      ],
    );
  }
}

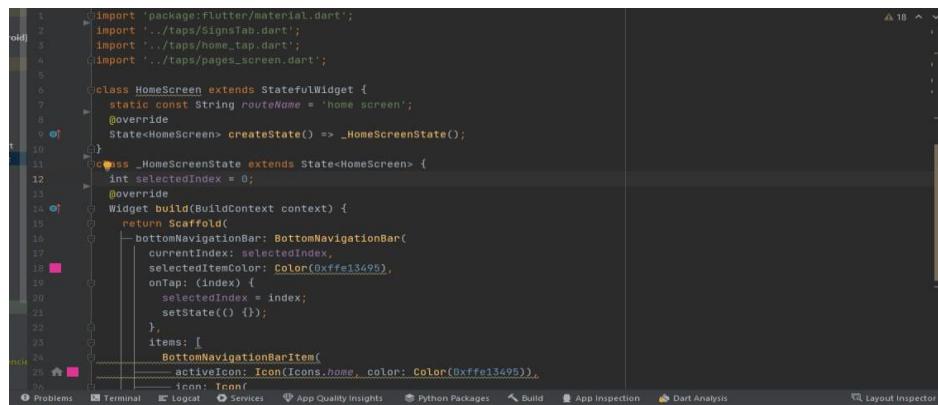
```

Try Again Open Build View Show Log in Explorer ▲ △ 19 ✎ 1

Taps



```
24:     BottomNavigationBarItem( 25:       activeIcon: Icon(Icons.home, color: Color(0xffe13495)), 26:       icon: Icon( 27:         Icons.home, 28:         color: Colors.grey, 29:       ), // Icon 30:       label: 'Home', 31:       backgroundColor: Color(0xffffccbbc1), 32:     ), // BottomNavigationBarItem 33:     BottomNavigationBarItem( 34:       activeIcon: 35:         Icon(Icons.sim_card_alert_sharp, color: Color(0xffe13495)), 36:       icon: Icon( 37:         Icons.sim_card_alert_sharp, 38:         color: Colors.grey, 39:       ), // Icon 40:       label: 'Signs', // BottomNavigationBarItem 41:     BottomNavigationBarItem( 42:       activeIcon: Icon(Icons.list_sharp, color: Color(0xffe13495)), 43:       icon: Icon( 44:         Icons.list_sharp, 45:         color: Colors.grey, 46:       ), // Icon 47:       label: 'Pages', // BottomNavigationBarItem 48:     ), // BottomNavigationBarItem 49:     selectedLabelStyle: TextStyle(color: Color(0xffe13495)),
```



```
1: import 'package:flutter/material.dart'; 2: import '../taps/signsTab.dart'; 3: import '../taps/homeTap.dart'; 4: import '../taps/pages_screen.dart'; 5: 6: class HomeScreen extends StatefulWidget { 7:   static const String routeName = 'home screen'; 8:   @override 9:     State<HomeScreen> createState() => _HomeScreenState(); 10: } 11: 12: class _HomeScreenState extends State<HomeScreen> { 13:   int selectedIndex = 0; 14:   @override 15:   Widget build(BuildContext context) { 16:     return Scaffold( 17:       bottomNavigationBar: BottomNavigationBar( 18:         currentIndex: selectedIndex, 19:         selectedItemColor: Color(0xffe13495), 20:         onTap: (index) { 21:           selectedIndex = index; 22:           setState(() {}); 23:         }, 24:         items: [ 25:           BottomNavigationBarItem( 26:             activeIcon: Icon(Icons.home, color: Color(0xffe13495)), 27:             icon: Icon( 28:               Icons.home, 29:               color: Colors.grey, 30:             ), // Icon 31:             label: 'Home', // BottomNavigationBarItem 32:           BottomNavigationBarItem( 33:             activeIcon: Icon(Icons.list_sharp, color: Color(0xffe13495)), 34:             icon: Icon( 35:               Icons.list_sharp, 36:               color: Colors.grey, 37:             ), // Icon 38:             label: 'Signs', // BottomNavigationBarItem 39:           BottomNavigationBarItem( 40:             activeIcon: Icon(Icons.list_sharp, color: Color(0xffe13495)), 41:             icon: Icon( 42:               Icons.list_sharp, 43:               color: Colors.grey, 44:             ), // Icon 45:             label: 'Pages', // BottomNavigationBarItem 46:           ), // BottomNavigationBarItem 47:           selectedLabelStyle: TextStyle(color: Color(0xffe13495)), 48:         ), // BottomNavigationBar 49:         backgroundColor: Colors.white, 50:         body: tabs[selectedIndex], 51:       ); // Scaffold 52:   } 53: 54:   List<Widget> tabs = [ 55:     HomeTap(), 56:     SignsTab(), 57:     PagesScreen(), 58:   ]; 59: }
```



```

54     "assets/images/photo_success1.jpg",
55     fit: BoxFit.cover,
56   ),
57   // Image.asset
58 ),
59 // Container
60 ),
61 // PreferredSize
62 backgroundColor: Colors.white,
63 body: Stack(
64   children: [
65     Center(
66       child: Padding(
67         padding: const EdgeInsets.only(top: 250),
68         child: InkWell(
69           onTap: () {
70             Navigator.of(context).pushNamed(CheckUpScreen.routeName);
71           },
72         ),
73         child: Container(
74           width: 342,
75           height: 100,
76           decoration: BoxDecoration(
77             borderRadius: BorderRadius.circular(25),
78             image: DecorationImage(
79               image: AssetImage(
80                 "assets/images/photo_checkup8.jpg"
81               ),
82             // AssetImage
83           ),
84         ),
85       ),
86     ),
87   ],
88 )
89 
```



```

1 import 'package:flutter/material.dart';
2 import './screens/checkup_screen.dart';
3 import './screens/deals.dart';
4 import './screens/diagnosis.dart';
5 import './screens/risk_factors_screen.dart';
6 import './screens/success_screen.dart';
7
8 class HomeTap extends StatefulWidget {
9   static const String routeName = 'home screen';
10  @override
11  State<HomeTap> createState() => _HomeTapState();
12 }
13 class _HomeTapState extends State<HomeTap> {
14   @override
15   Widget build(BuildContext context) {
16     return Container(
17       child: Scaffold(
18         appBar: PreferredSize(
19           preferredSize: Size.fromHeight(200),
20           child: AppBar(
21             elevation: 0,
22             backgroundColor: Colors.transparent,
23             scrolledUnderElevation: 50,
24             flexibleSpace: Container(
25               child: Image.asset(
26                 "assets/images/photo_success1.jpg"
27               ),
28             ),
29           ),
30         ),
31       ),
32     );
33   }
34 }
```



```

35   Positioned(
36     top: 380,
37     left: 15,
38     child: ElevatedButton(
39       style: ElevatedButton.styleFrom(
40         primary: Color(0xffF8CAE6),
41         onPrimary: Colors.white,
42         padding: EdgeInsets.only(
43           right: 125, left: 125, top: 12, bottom: 12), // EdgeInsets.only
44         shape: RoundedRectangleBorder(
45           borderRadius: BorderRadius.circular(12)), // RoundedRectangleBorder
46         onPressed: () {
47           Navigator.of(context).pushNamed(CheckUpScreen.routeName);
48         },
49       ),
50       child: Text(
51         "CheckUp",
52         style: TextStyle(
53           fontWeight: FontWeight.bold,
54           fontSize: 20,
55         ), // TextStyle
56       ), // Text
57     ), // ElevatedButton
58   ), // Positioned
59   Container(
60     child: Column(
61       children: [
62         Padding(
63           padding: const EdgeInsets.all(8.0),
64           child: Text(
65             "Success Stories",
66             style: TextStyle(fontSize: 15),
67           ), // Text
68         ), // Padding
69         Padding(
70           padding: const EdgeInsets.only(left: 30, top: 15),
71           child: InkWell(
72             onTap: () {
73               Navigator.of(context)
74                 .pushNamed(DiagnosisScreen.routeName);
75             },
76           ),
77           child: Column(
78             children: [
79               Container(
80                 width: 153,
81                 height: 95,
82                 decoration: BoxDecoration(
83                   borderRadius: BorderRadius.circular(15),
84                 ),
85               ),
86             ],
87           ),
88         ), // Padding
89       ],
90     ), // Column
91   ), // InkWell
92 }, // Padding
93 Padding(
94   padding: const EdgeInsets.only(left: 30, top: 15),
95   child: InkWell(
96     onTap: () {
97       Navigator.of(context)
98         .pushNamed(DiagnosisScreen.routeName);
99     },
100   ),
101   child: Column(
102     children: [
103       Container(
104         width: 153,
105         height: 95,
106         decoration: BoxDecoration(
107           borderRadius: BorderRadius.circular(15),
108         ),
109       ),
110     ],
111   ),
112 ), // Padding
113 ), // Column
114 ), // Container
115 ), // Column
116 ), // Container
117 ), // Column
118 ), // Container
119 ), // Column
120 ), // Container
121 ), // Column
122 ), // Container
123 ), // Column
124 ), // Container
125 ), // Column
126 ), // Container
127 ), // Column
128 ), // Container
129 ), // Column
130 ), // Container
131 ), // Column
132 ), // Container
133 ), // Column

```

Signs

```
124     Padding(
125       padding: const EdgeInsets.only(left: 70, top: 10),
126       child: Text(
127         " Armpit Pain",
128         style: TextStyle(fontSize: 22, color: Color(0xff1d303d)),
129       ), // Text
130     ), // Padding
131   ], // Row
132 ), // Row
133 Padding(
134   padding: const EdgeInsets.only(top: 20),
135   child: Row(
136     children: [
137       Image.asset(
138         "assets/images/photo_pull.jpg",
139         width: 180,
140         height: 150,
141       ), // Image.asset
142       Image.asset(
143         "assets/images/photo_irr.jpg",
144         width: 180,
145         height: 150,
146       ), // Image.asset
147     ],
148   ), // Row
), // Padding
```

```
1, // Row
), // Padding
Padding(
padding: const EdgeInsets.only(bottom: 20),
child: Row(
children: [
Padding(
padding: const EdgeInsets.only(left: 25, top: 10),
child: Text(
" Pulled in Nipple",
style:
TextStyle(fontSize: 22, color: Color(0xff1d303d)),
), // Text
), // Padding
Padding(
padding: const EdgeInsets.only(left: 40, top: 10),
child: Text(
" Skin Irritation",
style:
TextStyle(fontSize: 22, color: Color(0xff1d303d)),
), // Text
), // Padding
], // Row
), // Padding
), // Row
], // Row
), // Padding
```

```
1, // Row
), // Padding
Row(
children: [
Padding(
padding: const EdgeInsets.only(left: 30, top: 10),
child: Text(
" Visible Lump",
style: TextStyle(fontSize: 22, color: Color(0xff1d303d)),
), // Text
), // Padding
Padding(
padding: const EdgeInsets.only(left: 75, top: 10),
child: Text(
" Dimpling",
style: TextStyle(fontSize: 22, color: Color(0xff1d303d)),
), // Text
), // Padding
], // Row
), // Padding
], // Row
), // Padding
```

```
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```

child: Row(children: [Image.asset("assets/images/photo_skin.jpg", width: 180, height: 150,), // Image.asset Image.asset("assets/images/photo_arm.jpg", width: 180, height: 150,), // Image.asset],), // Row), // Padding Row(children: [Padding(padding: const EdgeInsets.only(left: 35, top: 10), child: Text("Skin texture \n change", style: TextStyle(fontSize: 22, color: Color(0xff1d303d)),), // Text],), // Padding],)

```
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```

child: Column(children: [Padding(padding: const EdgeInsets.only(top: 10, bottom: 10, right: 10, left: 0), // EdgeInsets.only child: Text("What changes should \n you be aware of?", style: TextStyle(fontSize: 22, color: Color(0xff1d303d)),), // Text],), // Padding Row(children: [Image.asset("assets/images/photo_nipple.jpg", width: 180, height: 150,), // Image.asset Image.asset("assets/images/photo_lump.jpg", width: 180, height: 150,), // Image.asset],), // Row Row(

```
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18
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45
46
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48
49
50
51
```

import 'package:flutter/material.dart'; void class SignsTab extends StatelessWidget { static const String routeName = 'Signs Tab'; @override Widget build(BuildContext context) { return Scaffold(backgroundColor: Colors.white, appBar: AppBar(centerTitle: true, elevation: 0, backgroundColor: Color(0xffffbcae6), title: Text("Warning Signs", style: TextStyle(fontSize: 22, fontWeight: FontWeight.bold, color: Colors.white),), // Text), // AppBar body: SingleChildScrollView(child: Column(children: [Padding(padding: const EdgeInsets.only(top: 10, bottom: 10, right: 10, left: 0), // EdgeInsets.only child: Text(

Pages

The image displays four separate code editors, each showing a snippet of Dart code for a different page in a mobile application. The code uses the Flutter framework's UI library.

- Settings:** This page has a white background. It contains a central container with a padding of 10 units on all sides. Inside this container is a text element with the text "SETTINGS" and a bold font size of 22. The entire container is wrapped in a BoxDecoration with a circular border radius of 10 and a white color. The container is also wrapped in a Padding with top, right, bottom, and left values of 8. The entire structure is wrapped in an InkWell with an onTap handler that pushes the 'Settings' route.
- Deals:** This page has a white background. It contains a central container with a padding of 10 units on all sides. Inside this container is a text element with the text "how to Deal" and a bold font size of 22. The entire container is wrapped in a BoxDecoration with a circular border radius of 10 and a white color. The container is also wrapped in a Padding with top, right, bottom, and left values of 8. The entire structure is wrapped in an InkWell with an onTap handler that pushes the 'Deals' route.
- Risk Factors:** This page has a white background. It contains a central container with a padding of 10 units on all sides. Inside this container is a text element with the text "Risk Factors" and a bold font size of 22. The entire container is wrapped in a BoxDecoration with a circular border radius of 10 and a white color. The container is also wrapped in a Padding with top, right, bottom, and left values of 8. The entire structure is wrapped in an InkWell with an onTap handler that pushes the 'RiskFactors' route.
- Diagnosis:** This page has a white background. It contains a central container with a padding of 10 units on all sides. Inside this container is a text element with the text "Diagnosis" and a bold font size of 22. The entire container is wrapped in a BoxDecoration with a circular border radius of 10 and a white color. The container is also wrapped in a Padding with top, right, bottom, and left values of 8. The entire structure is wrapped in an InkWell with an onTap handler that pushes the 'DiagnosisScreen' route.

```
1. Settings code:  
InkWell(  
  onTap: () {  
    //settings  
    Navigator.of(context).pushNamed(Settings.routeName);  
  },  
  child: Padding(  
    padding:  
      const EdgeInsets.only(top: 3, right: 8, bottom: 5, left: 8),  
    child: Container(  
      width: 400,  
      height: 55,  
      child: Padding(  
        padding:  
          const EdgeInsets.only(top: 10, bottom: 8, left: 10),  
        child: Text(  
          "SETTINGS",  
          style:  
            TextStyle(fontSize: 22, fontWeight: FontWeight.bold),  
        ), // Text  
      ), // Padding  
      decoration: BoxDecoration(  
        borderRadius: BorderRadius.circular(10),  
        color: Colors.white,  
      ), // BoxDecoration  
    ), // Container  
  ), // Padding  
), // InkWell  
  
2. Deals code:  
InkWell(  
  onTap: () {  
    Navigator.of(context).pushNamed(Deals.routeName);  
  },  
  child: Padding(  
    padding:  
      const EdgeInsets.only(top: 3, right: 8, bottom: 5, left: 8),  
    child: Container(  
      width: 400,  
      height: 50,  
      child: Padding(  
        padding:  
          const EdgeInsets.only(top: 10, bottom: 8, left: 10),  
        child: Text(  
          "how to Deal",  
          style:  
            TextStyle(fontSize: 22, fontWeight: FontWeight.bold),  
        ), // Text  
      ), // Padding  
      decoration: BoxDecoration(  
        borderRadius: BorderRadius.circular(10),  
        color: Colors.white,  
      ), // BoxDecoration  
    ), // Container  
  ), // Padding  
), // InkWell  
  
3. Risk Factors code:  
InkWell(  
  onTap: () {  
    Navigator.of(context).pushNamed(RiskFactors.routeName);  
  },  
  child: Padding(  
    padding:  
      const EdgeInsets.only(top: 3, right: 8, bottom: 5, left: 8),  
    child: Container(  
      width: 400,  
      height: 55,  
      child: Padding(  
        padding:  
          const EdgeInsets.only(top: 10, bottom: 8, left: 10),  
        child: Text(  
          "Risk Factors",  
          style:  
            TextStyle(fontSize: 22, fontWeight: FontWeight.bold),  
        ), // Text  
      ), // Padding  
      decoration: BoxDecoration(  
        borderRadius: BorderRadius.circular(10),  
        color: Colors.white,  
      ), // BoxDecoration  
    ), // Container  
  ), // Padding  
), // InkWell  
  
4. Diagnosis code:  
InkWell(  
  onTap: () {  
    Navigator.of(context).pushNamed(DiagnosisScreen.routeName);  
  },  
  child: Padding(  
    padding:  
      const EdgeInsets.only(top: 3, right: 8, bottom: 5, left: 8),  
    child: Container(  
      width: 400,  
      height: 55,  
      child: Padding(  
        padding:  
          const EdgeInsets.only(top: 10, bottom: 8, left: 10),  
        child: Text(  
          "Diagnosis",  
          style:  
            TextStyle(fontSize: 22, fontWeight: FontWeight.bold),  
        ), // Text  
      ), // Padding  
      decoration: BoxDecoration(  
        borderRadius: BorderRadius.circular(10),  
        color: Colors.white,  
      ), // BoxDecoration  
    ), // Container  
  ), // Padding  
), // InkWell  
InkWell(  
  
```

```

139
140   onTap: () {
141     //know more
142     Navigator.of(context).pushNamed(KnowMore.routeName);
143   },
144   child: Padding(
145     padding: const EdgeInsets.only(top: 3, right: 8, bottom: 5, left: 8),
146     child: Container(
147       width: 400,
148       height: 55,
149       child: Padding(
150         padding: const EdgeInsets.only(top: 10, bottom: 8, left: 10),
151         child: Text(
152           "Know More",
153           style: TextStyle(fontSize: 22, fontWeight: FontWeight.bold),
154         ),
155       ), // Text
156     ), // Padding
157     decoration: BoxDecoration(
158       borderRadius: BorderRadius.circular(10),
159       color: Colors.white,
160     ), // BoxDecoration
161   ), // Container
162 ), // Padding
163
164
165
166   InkWell(
167     onTap: () {
168       //contact us
169       Navigator.of(context).pushNamed(ChatScreen.routeName);
170     },
171     child: Padding(
172       padding: const EdgeInsets.only(top: 3, right: 8, bottom: 5, left: 8),
173       child: Container(
174         width: 400,
175         height: 55,
176         child: Padding(
177           padding: const EdgeInsets.only(top: 10, bottom: 8, left: 10),
178           child: Text(
179             "Check Up",
180             style: TextStyle(fontSize: 22, fontWeight: FontWeight.bold),
181           ),
182         ), // Text
183       ), // Padding
184       decoration: BoxDecoration(
185         borderRadius: BorderRadius.circular(10),
186         color: Colors.white,
187       ), // BoxDecoration
188     ), // Container
189   ), // InkWell
190
191
192   InkWell(
193     onTap: () {
194       Navigator.of(context).pushReplacementNamed(HomeTap.routeName);
195     },
196     child: Padding(
197       padding: const EdgeInsets.only(top: 3, right: 8, bottom: 5, left: 8),
198       child: Container(
199         width: 400,
200         height: 55,
201         child: Padding(
202           padding: const EdgeInsets.only(top: 10, bottom: 8, left: 10),
203           child: Text(
204             "Home",
205             style: TextStyle(fontSize: 22, fontWeight: FontWeight.bold),
206           ),
207         ), // Text
208       ), // Padding
209       decoration: BoxDecoration(
210         borderRadius: BorderRadius.circular(10),
211         color: Colors.white,
212       ), // BoxDecoration
213     ), // Container
214   ), // InkWell
215
216
217   InkWell(
218     onTap: () {
219       Navigator.of(context).pushNamed(RegisterScreen.routeName);
220     },
221     child: Padding(
222       padding: const EdgeInsets.only(top: 3, right: 8, bottom: 5, left: 8),
223       child: Container(
224         width: 400,
225         height: 55,
226         child: Padding(
227           padding: const EdgeInsets.only(top: 10, bottom: 8, left: 10),
228           child: Text(
229             "Sign Up",
230             style: TextStyle(fontSize: 22, fontWeight: FontWeight.bold),
231           ),
232         ), // Text
233       ), // Padding
234     ), // Container
235   ), // InkWell
236
237
238

```

```
49     TextStyle(fontSize: 22, fontWeight: FontWeight.bold),
50   ),
51   ),
52   ),
53   ),
54   ),
55   ),
56   ),
57   ),
58   ),
59   ),
60   ),
61   ),
62   ),
63   ),
64   ),
65   ),
66   ),
67   ),
68   ),
69   ),
70   ),
71   ),
72   ),
73   ),
74   ),
```

This screenshot shows the code for the RegisterScreen.dart file. It defines a StatelessWidget with a build method. The build method returns a Scaffold with a white background color. The body of the scaffold contains a Column with vertical direction set to down. Inside the column, there is an InkWell with an onTap handler that pushes the RegisterScreen route. The InkWell has a padding of 8 pixels on all sides. Inside the padding, there is a Container with a width of 400 and a height of 55. This container holds a Padding with a padding of 10 pixels on all sides. Inside this padding, there is a Text with the content "Sign Up" and a style of bold font weight and size 22.

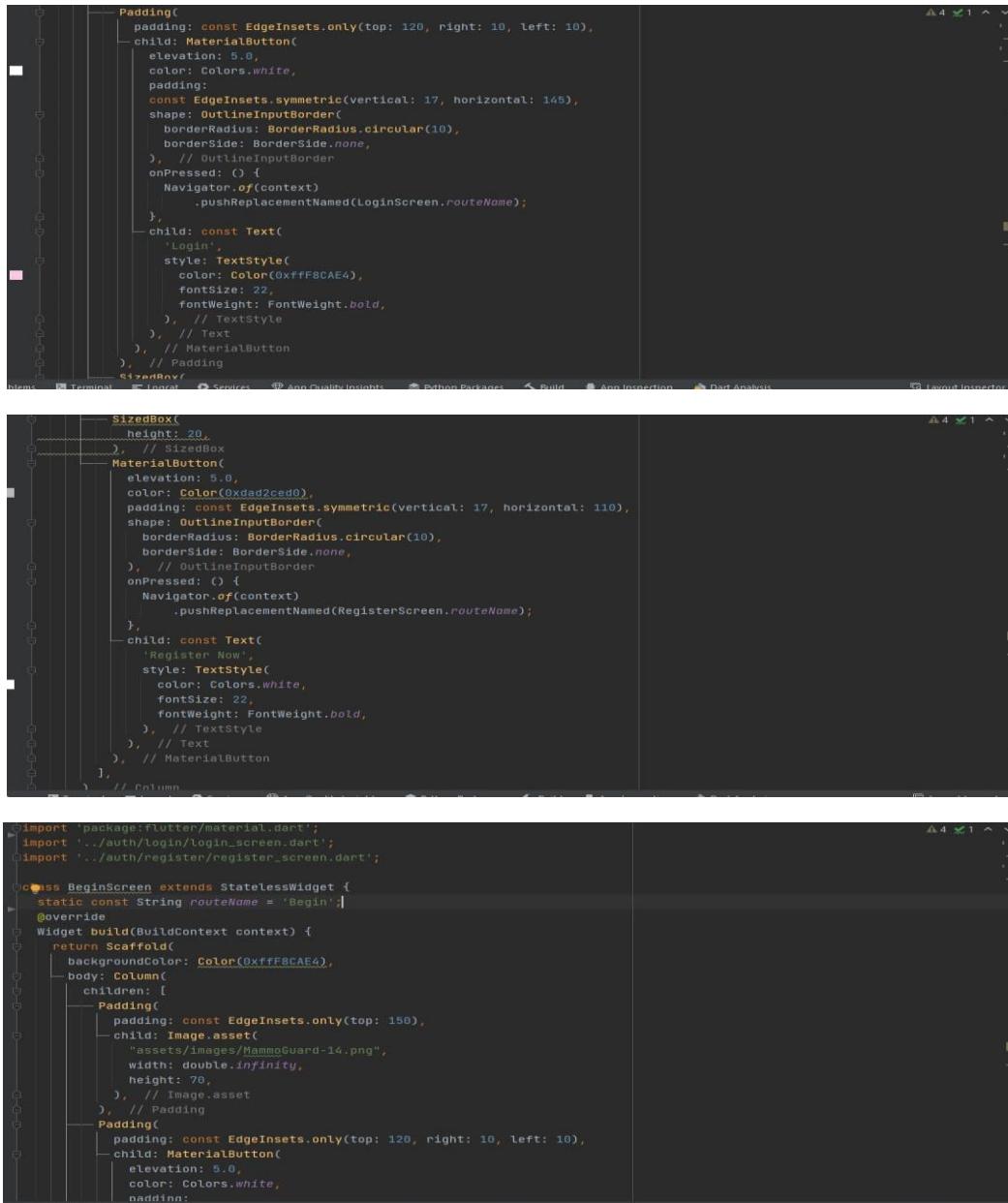
```
28   ),
29   ),
30   ),
31   ),
32   ),
33   ),
34   ),
35   ),
36   ),
37   ),
38   ),
39   ),
40   ),
41   ),
42   ),
43   ),
44   ),
45   ),
46   ),
47   ),
48   ),
49   ),
50   ),
51   ),
52   ),
```

This screenshot shows the code for the LoginScreen.dart file. It defines a StatelessWidget with a build method. The build method returns a Scaffold with a white background color. The body of the scaffold contains a Column with vertical direction set to down. Inside the column, there is an InkWell with an onTap handler that pushes the LoginScreen route. The InkWell has a padding of 10 pixels on all sides. Inside the padding, there is a Container with a width of 400 and a height of 55. This container holds a Padding with a padding of 8 pixels on all sides. Inside this padding, there is a Text with the content "Login" and a style of bold font weight and size 22.

```
1   import 'package:flutter/material.dart';
2   import '../chat/chat_screen.dart';
3   import '../auth/login/login_screen.dart';
4   import '../auth/register/register_screen.dart';
5   import '../screens/deals.dart';
6   import '../screens/diagnosis.dart';
7   import '../screens/know_more.dart';
8   import '../screens/risk_factors_screen.dart';
9   import '../screens/self_examination.dart';
10  import '../screens/settings.dart';
11  import 'home_tab.dart';
12
13 class PagesScreen extends StatelessWidget {
14   static const String routeName = 'pages screen';
15
16   @override
17   Widget build(BuildContext context) {
18     return Scaffold(
19       appBar: AppBar(
20         backgroundColor: Color(0xffF8CAE4),
21         centerTitle: true,
22         title: Text(
23           "pages",
24           style: TextStyle(
25             fontSize: 25, fontWeight: FontWeight.bold, color: Colors.white), // TextStyle
26           ), // Text
27     ), // AppBar
28   ), // Scaffold
29 }
```

This screenshot shows the code for the PagesScreen.dart file. It defines a StatelessWidget with a build method. The build method returns a Scaffold with a light blue background color (Color(0xffF8CAE4)). The appBar of the scaffold has a title "pages" with a bold font weight and size 25, and a white color.

The begin page appears after splash



The image shows three vertically stacked code editors, each displaying a portion of the `BeginScreen` widget's structure. The top two editors show the `MaterialButton` and `Text` components for the 'Login' button, while the bottom editor shows the `Scaffold` and `Image.asset` component.

```
Padding(
  padding: const EdgeInsets.only(top: 120, right: 10, left: 10),
  child: MaterialButton(
    elevation: 5.0,
    color: Colors.white,
    padding: const EdgeInsets.symmetric(vertical: 17, horizontal: 145),
    shape: OutlineInputBorder(
      borderRadius: BorderRadius.circular(10),
      borderSide: BorderSide.none,
    ), // OutlineInputBorder
    onPressed: () {
      Navigator.of(context)
        .pushReplacementNamed(LoginScreen.routeName);
    },
    child: const Text(
      'Login',
      style: TextStyle(
        color: Color(0xffFB8CAE),
        fontSize: 22,
        fontWeight: FontWeight.bold,
      ), // TextStyle
    ), // Text
  ), // MaterialButton
), // Padding
SizedBox(
  height: 20,
), // SizedBox
MaterialButton(
  elevation: 5.0,
  color: Color(0xdead2ced0),
  padding: const EdgeInsets.symmetric(vertical: 17, horizontal: 110),
  shape: OutlineInputBorder(
    borderRadius: BorderRadius.circular(10),
    borderSide: BorderSide.none,
  ), // OutlineInputBorder
  onPressed: () {
    Navigator.of(context)
      .pushReplacementNamed(RegisterScreen.routeName);
  },
  child: const Text(
    'Register Now',
    style: TextStyle(
      color: Colors.white,
      fontSize: 22,
      fontWeight: FontWeight.bold,
    ), // TextStyle
  ), // Text
), // MaterialButton
), // Column
```

```
import 'package:flutter/material.dart';
import '../auth/login/login_screen.dart';
import '../auth/register/register_screen.dart';

class BeginScreen extends StatelessWidget {
  static const String routeName = 'Begin';
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      backgroundColor: Color(0xffFB8CAE),
      body: Column(
        children: [
          Padding(
            padding: const EdgeInsets.only(top: 150),
            child: Image.asset(
              "assets/images/MammoGuard-34.png",
              width: double.infinity,
              height: 70,
            ), // Image.asset
          ), // Padding
          Padding(
            padding: const EdgeInsets.only(top: 120, right: 10, left: 10),
            child: MaterialButton(
              elevation: 5.0,
              color: Colors.white,
```

Success Stories

```

children: [
  Container(
    children: [
      Container(
        width: 200,
        height: 200,
        child: Image.asset(
          'assets/images/head.jpg',
        ),
      ), // Image.asset
    ], // Container
  ), // Column
  Container(
    padding: EdgeInsets.only(top: 20),
    child: Row(
      children: [
        Container(
          width: 150,
          height: 50,
          child: Text(
            'Simpson Lebam',
            style: TextStyle(
              color: Color(0xffffffff),
              fontWeight: FontWeight.bold),
            fontSize: 20,
          ),
        ), // Text
      ], // Container
    ),
  ), // Container
]
  
```

```

), // Container
Container(
  width: 200,
  height: 80,
  child: Text(
    'I am Simmone Lebam, 27 years old, married! have twins. I got married at a young age and gave birth to my first child when I was 18 years old. Now I have two children, a boy and a girl. I work as a teacher at a local school. I enjoy spending time with my family and friends. I also like to travel and explore new places. I am happy to be a mother and wife, and I am grateful for all the support and love I receive from my husband and children. I am looking forward to many more years of happiness and success in my life.',

    style: TextStyle(
      color: Colors.black,
      fontSize: 14,
    ),
  ), // Text
), // Container
SizedBox(
  height: 10,
), // SizedBox
ElevatedButton(
  onPressed: () {
    Navigator.of(context)
      .pushNamed(Homes.routeName);
  },
  child: Text('KNOW MORE'),
  style: ElevatedButton.styleFrom(
    primary: Color(0xffffffff),
    padding: EdgeInsets.symmetric(
      horizontal: 70, vertical: 15), // EdgeInsets.symmetric
  ),
),
  
```

```

width: 150,
height: 80,
child: Text(
  'Simpson Lebam',
  style: TextStyle(
    color: Color(0xffffffff),
    fontSize: 20,
    fontWeight: FontWeight.bold),
  ), // Text
), // Container
Container(
  width: 200,
  height: 80,
  child: Text(
    'I am Simmone Lebam, 27 years old, married! have twins. I got married at a young age and gave birth to my first child when I was 18 years old. Now I have two children, a boy and a girl. I work as a teacher at a local school. I enjoy spending time with my family and friends. I also like to travel and explore new places. I am happy to be a mother and wife, and I am grateful for all the support and love I receive from my husband and children. I am looking forward to many more years of happiness and success in my life.',

    style: TextStyle(
      color: Colors.black,
      fontSize: 14,
    ),
  ), // Text
), // Container
SizedBox(
  height: 10,
), // SizedBox
ElevatedButton(
  onPressed: () {
    Navigator.of(context)
      .pushNamed(Homes.routeName);
  },
  child: Text('KNOW MORE'),
  style: ElevatedButton.styleFrom(
    primary: Color(0xffffffff),
    padding: EdgeInsets.symmetric(
      horizontal: 70, vertical: 15), // EdgeInsets.symmetric
  ),
),
  
```

```

SizedBox(
  height: 10,
), // SizedBox
ElevatedButton(
  onPressed: () {
    showAlertDialog(context);
  },
  child: Text('KNOW MORE'),
  style: ElevatedButton.styleFrom(
    primary: Color(0xffffffff),
    padding: EdgeInsets.symmetric(
      horizontal: 70, vertical: 15), // EdgeInsets.symmetric
    shape: RoundedRectangleBorder(
      borderRadius: BorderRadius.circular(10)), // RoundedRectangleBorder
  ),
), // ElevatedButton
SizedBox(
  height: 10,
), // SizedBox
Container(
  width: 200,
  height: 80,
  child: Text(
    'I am Simmone Lebam, 27 years old, married! have twins. I got married at a young age and gave birth to my first child when I was 18 years old. Now I have two children, a boy and a girl. I work as a teacher at a local school. I enjoy spending time with my family and friends. I also like to travel and explore new places. I am happy to be a mother and wife, and I am grateful for all the support and love I receive from my husband and children. I am looking forward to many more years of happiness and success in my life.',

    style: TextStyle(
      color: Colors.black,
      fontSize: 14,
    ),
  ), // Text
), // Container
Row(
  mainAxisSize: MainAxisSize.spaceAround,
  children: [
    Column(
      children: [
        Container(
          width: 100,
          height: 100,
          child: Image.asset(
            'assets/images/stemma.jpg',
          ),
        ), // Image.asset
      ], // Container
    ), // Column
  ],
), // Row
  
```

```

margin: EdgeInsets.symmetric(horizontal: 10.0, vertical: 10.0),
decoration: BoxDecoration(
  borderRadius: BorderRadius.circular(20),
  color: Colors.white,
), // BoxDecoration
padding: EdgeInsets.only(top: 10),
child: Row(
  mainAxisAlignment: MainAxisAlignment.spaceAround,
  children: [
    Column(
      children: [
        Container(
          width: 100,
          height: 100,
          child: Image.asset(
            'assets/images/stemma.jpg',
          ),
        ), // Image.asset
      ], // Container
    ), // Column
  ],
), // Row
Container(
  padding: EdgeInsets.only(top: 20),
  child: Row(
    children: [
      Column(
        
```

```

), // Container
Container(
  width: 200,
  height: 80,
  child: Text(
    'I am Simmone Lebam, 27 years old, married! have twins. I got married at a young age and gave birth to my first child when I was 18 years old. Now I have two children, a boy and a girl. I work as a teacher at a local school. I enjoy spending time with my family and friends. I also like to travel and explore new places. I am happy to be a mother and wife, and I am grateful for all the support and love I receive from my husband and children. I am looking forward to many more years of happiness and success in my life.',

    style: TextStyle(
      color: Colors.black,
      fontSize: 14,
    ),
  ), // Text
), // Container
SizedBox(
  height: 10,
), // SizedBox
ElevatedButton(
  onPressed: () {
    Navigator.of(context)
      .pushNamed(Homes.routeName);
  },
  child: Text('KNOW MORE'),
  style: ElevatedButton.styleFrom(
    primary: Color(0xffffffff),
    padding: EdgeInsets.symmetric(
      horizontal: 70, vertical: 15), // EdgeInsets.symmetric
  ),
),
  
```

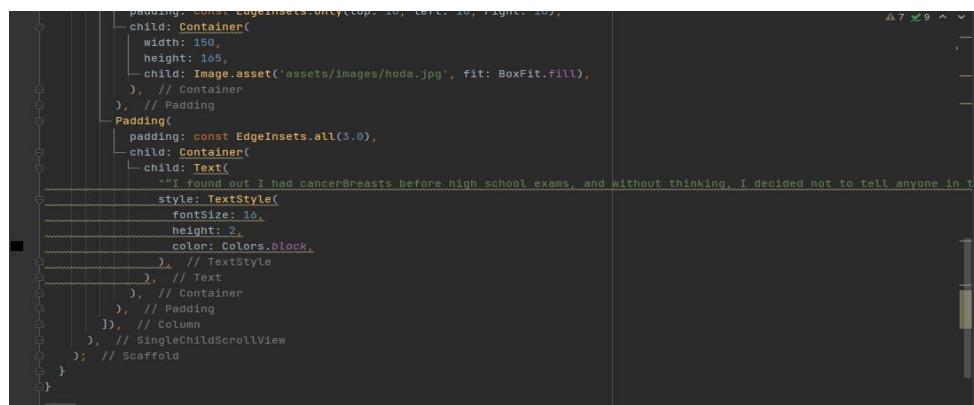
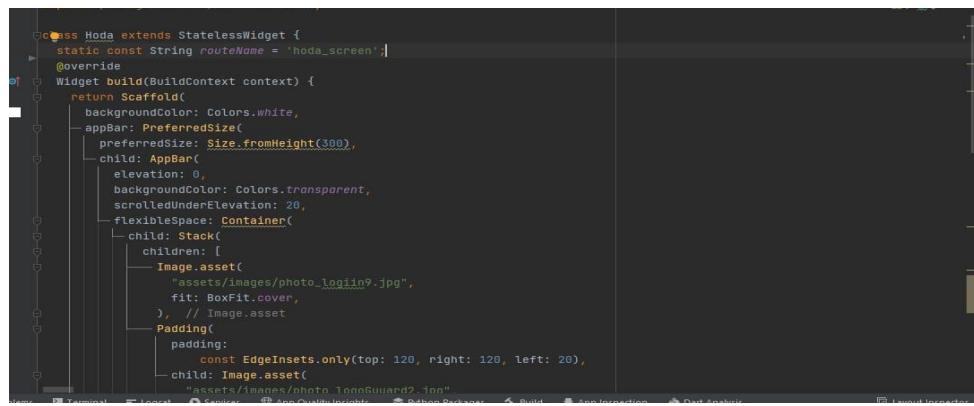
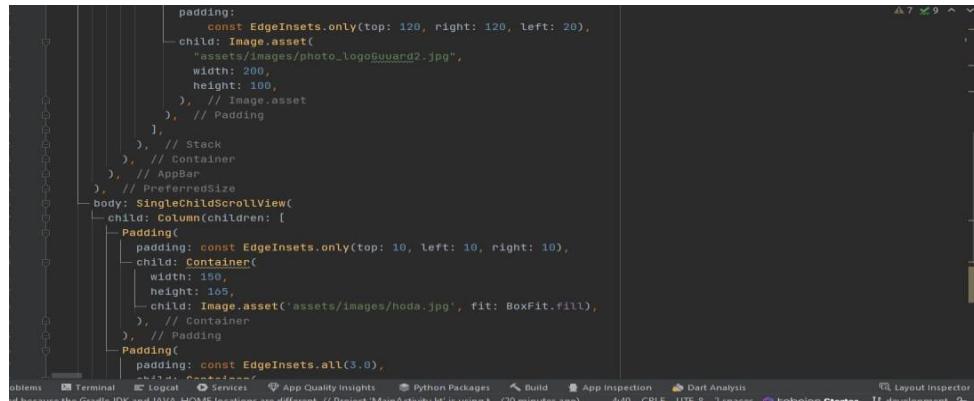
```
},  
child: Text('KNOW MORE'),  
style: ElevatedButton.styleFrom(  
  primary: Color(0xffff8cae4),  
  padding: EdgeInsets.symmetric(  
    horizontal: 70, vertical: 15), // EdgeInsets.symmetric  
  shape: RoundedRectangleBorder(  
    borderRadius: BorderRadius.circular(10)), // RoundedRectangleBorder  
,  
, // ElevatedButton  
SizedBox(  
  height: 10,  
) // SizedBox  
],  
, // Column  
],  
, // Row  
, // Container  
], // Row  
, // Container  
Container(  
  margin: EdgeInsets.symmetric(horizontal: 12.0, vertical: 10.0),  
  decoration: BoxDecoration(  
    borderRadius: BorderRadius.circular(20),  
    color: Colors.white,
```

```
width: 100,  
height: 50,  
child: Text(  
  'Hind Baghdady',  
  style: TextStyle(  
    color: Color(0xffff8cae4),  
    fontSize: 20,  
    fontWeight: FontWeight.bold), // TextStyle  
, // Text  
, // Container  
Container(  
  width: 200,  
  height: 80,  
  child: Text(  
    'Hind Kobra Baghdadi Ahmed, in her forties, is a widow and has her only child. Life was her w',  
    style: TextStyle(  
      color: Colors.black,  
      fontSize: 14,  
    ), // TextStyle  
, // Text  
, // Container  
SizedBox(  
  height: 10,  
) // SizedBox  
ElevatedButton(  
  onPressed: () {
```

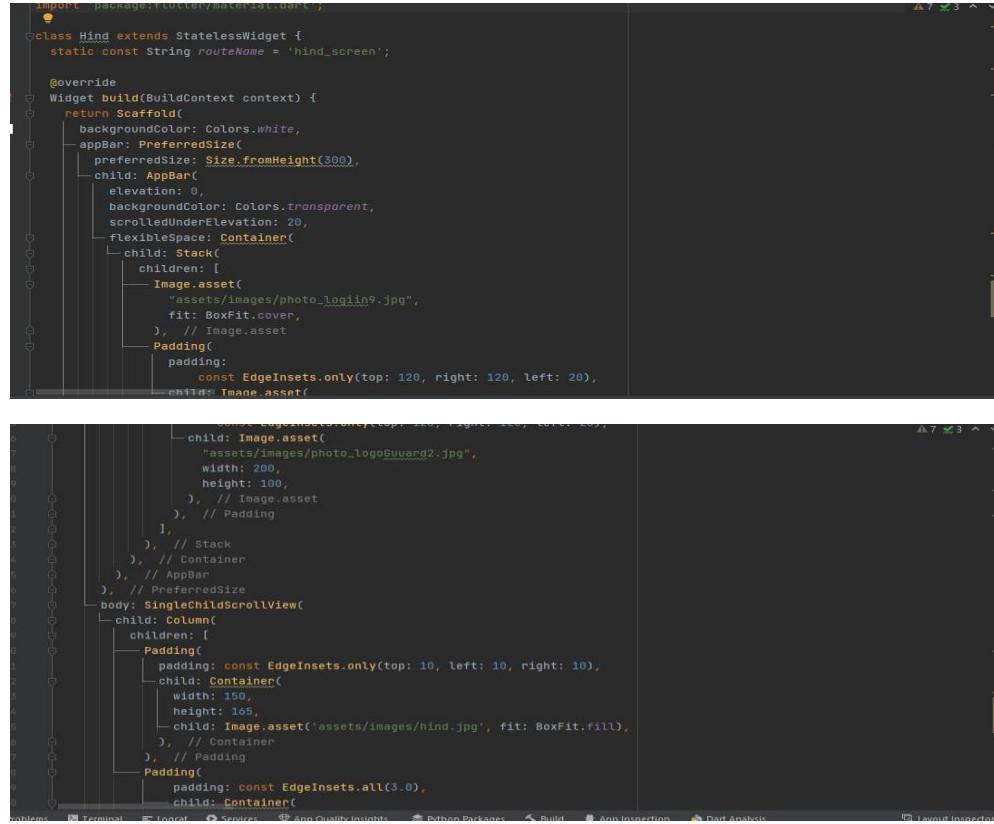
```
import 'package:flutter/material.dart';  
import 'package:flutter/material.dart';  
import 'hoda.dart';  
  
class SuccessScreen extends StatelessWidget {  
  static const String routeName = 'success_screen';  
  
  @override  
  Widget build(BuildContext context) {  
    return Scaffold(  
      appBar: AppBar(  
        backgroundColor: Color(0xffff8cae4),  
        centerTitle: true,  
        title: Text(  
          'Success Stories',  
          style: TextStyle(  
            fontSize: 20, fontWeight: FontWeight.bold, color: Colors.white), // TextStyle  
, // Text  
, // AppBar  
      backgroundColor: Color(0xffff33ff),  
      body: SingleChildScrollView(  
        child: Column(  
          children: [  
            const SizedBox(height: 5),  
            Container(  
              margin: EdgeInsets.symmetric(horizontal: 12.0, vertical: 10.0),
```

```
            decoration: BoxDecoration(  
              borderRadius: BorderRadius.circular(20),  
              color: Colors.white,  
, // BoxDecoration  
            padding: EdgeInsets.only(top: 10),  
            child: Row(  
              mainAxisAlignment: MainAxisAlignment.spaceAround,  
              children: [  
                Column(  
                  children: [  
                    Container(  
                      width: 100,  
                      height: 100,  
                      child: Image.asset(  
                        'assets/images/hind.jpg',  
, // Image.asset  
, // Container  
, // Column  
                Container(  
                  padding: EdgeInsets.only(top: 20),  
                  child: Row(  
                    children: [  
                      Column(  
                        children: [  
                          Container(  
                            width: 100,
```

Hoda



Hind



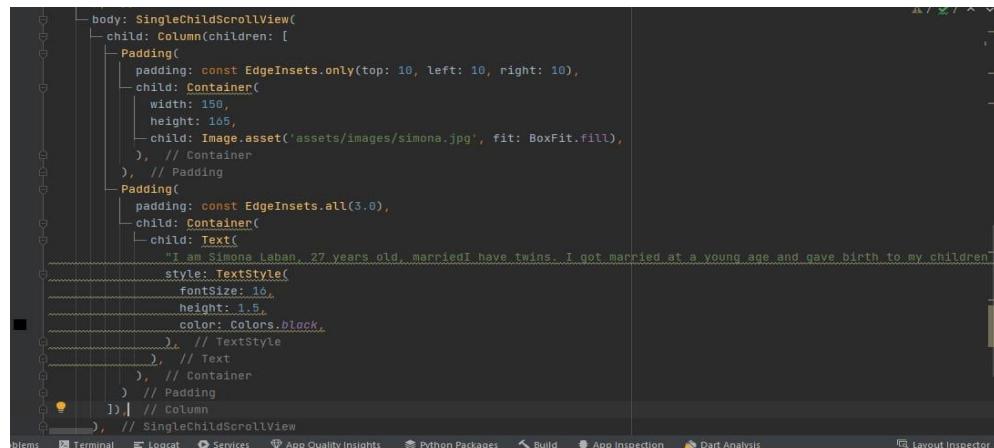
```
import 'package:flutter/material.dart';

class Hind extends StatelessWidget {
  static const String routeName = 'hind_screen';

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      backgroundColor: Colors.white,
      appBar: PreferredSize(
        preferredSize: Size.fromHeight(300),
        child: AppBar(
          elevation: 0,
          backgroundColor: Colors.transparent,
          scrolledUnderElevation: 20,
          flexibleSpace: Container(
            child: Stack(
              children: [
                Image.asset(
                  "assets/images/photo_login9.jpg",
                  fit: BoxFit.cover,
                ), // Image.asset
                Padding(
                  padding: const EdgeInsets.only(top: 120, right: 120, left: 20),
                  child: Image.asset(

```

Simona



```
body: SingleChildScrollView(
  child: Column(children: [
    Padding(
      padding: const EdgeInsets.only(top: 10, left: 10, right: 10),
      child: Container(
        width: 150,
        height: 165,
        child: Image.asset('assets/images/simona.jpg', fit: BoxFit.fill),
      ), // Container
    ), // Padding
    Padding(
      padding: const EdgeInsets.all(3.0),
      child: Container(

```

Diagnosis

```
class Deals extends StatelessWidget {
  static const String routeName = 'how_to_deal';

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      backgroundColor: Colors.white,
      appBar: AppBar(
        centerTitle: true,
        elevation: 0,
        backgroundColor: Color(0xffFBCAE4),
        title: Text(
          "How to Deal",
          style: TextStyle(
            fontSize: 22, fontWeight: FontWeight.bold, color: Colors.white),
        ),
      ),
      body: SingleChildScrollView(
        child: Column(
          children: [
            Padding(
              padding: const EdgeInsets.only(top: 8, bottom: 8, right: 80),
              child: Text(
                "Breast cancer and Mental Health",
                style: TextStyle(fontSize: 25, color: Color(0xff1d303d)),
              ),
            ),
            Padding(
              padding: const EdgeInsets.only(left: 20, top: 8, bottom: 0),
              child: Row(
                children: [
                  InkWell(
                    onTap: () {
                      ///partner
                      Navigator.of(context)
                        .pushNamed(TalkingPartner.routeName);
                    },
                    child: Container(
                      child: Image.asset(
                        "assets/images/partner.jpg",
                        width: 150,
                        height: 140,
                      ),
                    ),
                  ),
                  Padding(
                    padding: const EdgeInsets.only(left: 20, top: 8),
                    child: InkWell(
                      onTap: () {
                        ///children
                        Navigator.of(context)
                          .pushNamed(TalkingChildren.routeName);
                      },
                      child: Container(
                        child: Image.asset(
                          "assets/images/child.jpg",
                          width: 150,
                          height: 140,
                        ),
                      ),
                    ),
                  ),
                ],
              ),
            ),
            Padding(
              padding: const EdgeInsets.only(right: 50, left: 30),
              child: Text(
                "Talking to your",
                style: TextStyle(
                  fontSize: 22, color: Color(0xff1d303d)),
              ),
            ),
            Padding(
              padding: const EdgeInsets.only(right: 50, left: 40),
              child: Text(
                "Partner",
                style: TextStyle(
                  fontSize: 24, fontWeight: FontWeight.bold,
                  color: Color(0xffe13495)),
              ),
            ),
            Column(
              children: [
                Padding(
                  padding: const EdgeInsets.only(left: 5, top: 10),
                  child: Text(
                    "After receiving a breast cancer",
                    style: TextStyle(fontSize: 20, color: Color(0xff1d303d)),
                  ),
                ),
                Padding(
                  padding: const EdgeInsets.only(left: 5, top: 8),
                  child: Text(
                    "diagnosis, people need time to process",
                    style: TextStyle(fontSize: 20, color: Color(0xff1d303d)),
                  ),
                ),
                Padding(
                  padding: const EdgeInsets.only(left: 5, top: 8),
                  child: Text(
                    "their feelings and to figure out how to",
                    style: TextStyle(fontSize: 20, color: Color(0xff1d303d)),
                  ),
                ),
                Padding(
                  padding: const EdgeInsets.only(left: 5, top: 8),
                  child: Text(
                    "cope with the diagnosis",
                    style: TextStyle(fontSize: 20, color: Color(0xff1d303d)),
                  ),
                ),
              ],
            ),
          ],
        ),
      ),
    );
  }
}
```

```
    children: [
      Padding(
        padding: const EdgeInsets.only(left: 25, top: 8, bottom: 0),
        child: Row(
          children: [
            InkWell(
              onTap: () {
                ///relatives
                Navigator.of(context)
                  .pushNamed(TalkingRelatives.routeName);
              },
              child: Container(
                child: Image.asset(
                  "assets/images/relatives.jpg",
                  width: 150,
                  height: 200,
                ), // Image.asset
              ), // Container
            ), // InkWell
            Padding(
              padding: const EdgeInsets.only(left: 26, top: 8),
              child: InkWell(
                onTap: () {
                  ///stress
                  Navigator.of(context)
                    .pushNamed(ManagingStress.routeName);
                },
              ), // InkWell
            ), // InkWell
          ],
        ), // Row
      ), // Padding
    ],
  ),

```

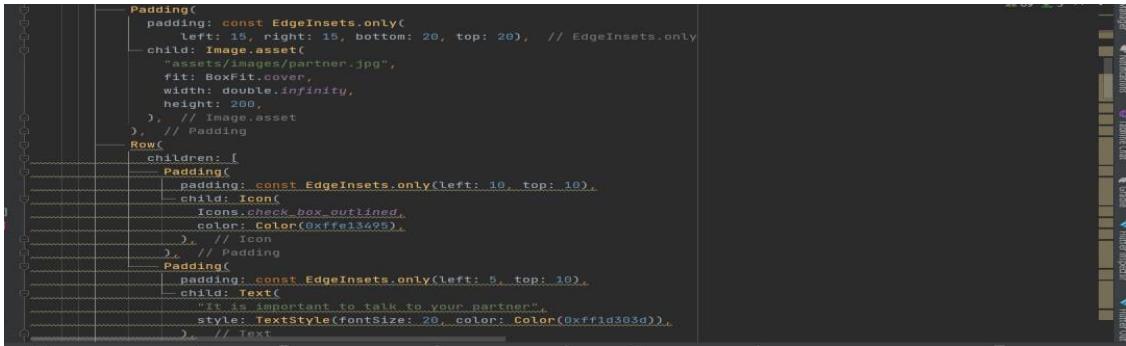
```
    ],
  ), // Column
  Column(
    children: [
      Padding(
        padding: const EdgeInsets.only(left: 20),
        child: Text(
          "Managing",
          style: TextStyle(
            fontSize: 22, color: Color(0xff1d303d)), // TextStyle
        ), // Text
      ), // Padding
      Padding(
        padding: const EdgeInsets.only(left: 20),
        child: Text(
          "Stress",
          style: TextStyle(
            fontSize: 24,
            fontWeight: FontWeight.bold,
            color: Color(0xffe13495)), // TextStyle
        ), // Text
      ), // Padding
    ],
  ), // Column

```

```
    ],
  ), // Column
  Column(
    children: [
      Padding(
        padding: const EdgeInsets.only(right: 0, left: 5),
        child: Text(
          "Talking to your",
          style: TextStyle(
            fontSize: 22, color: Color(0xff1d303d)), // TextStyle
        ), // Text
      ), // Padding
      Padding(
        padding: const EdgeInsets.only(right: 0, left: 5),
        child: Text(
          "children",
          style: TextStyle(
            fontSize: 24,
            fontWeight: FontWeight.bold,
            color: Color(0xffe13495)), // TextStyle
        ), // Text
      ), // Padding
    ],
  ), // Column
), // Row

```

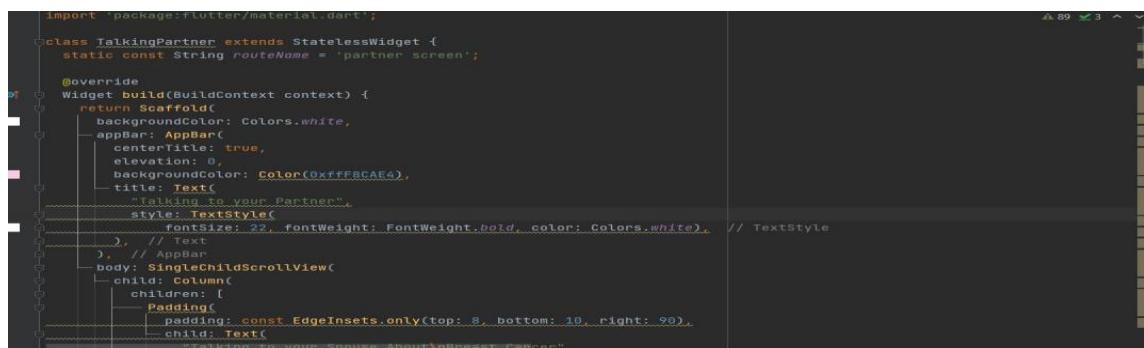
How to deal



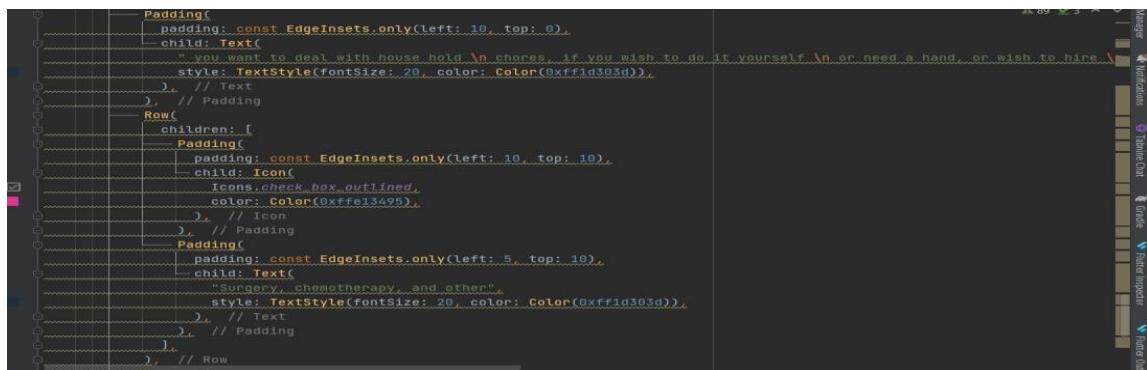
```
Padding(
  padding: const EdgeInsets.only(
    left: 15, right: 15, bottom: 20, top: 20), // EdgeInsets.only
  child: Image.asset(
    "assets/images/partner.jpg",
    fit: BoxFit.cover,
    width: double.infinity,
    height: 200
  ), // Image.asset
), // Padding
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 10, top: 10),
      child: Icon(
        Icons.check_box_outlined,
        color: Color(0xffe13495),
      ), // Icon
    ), // Padding
    Padding(
      padding: const EdgeInsets.only(left: 5, top: 10),
      child: Text(
        "It is important to talk to your partner",
        style: TextStyle(fontSize: 20, color: Color(0xff1d303d)),
      ), // Text
    ), // Padding
  ],
), // Row
```



```
    child: Icon(
      Icons.check_box_outlined,
      color: Color(0xffe13495),
    ), // Icon
  ), // Padding
  Padding(
    padding: const EdgeInsets.only(left: 5, top: 10),
    child: Text(
      "Surgery, chemotherapy, and other",
      style: TextStyle(fontSize: 20, color: Color(0xff1d303d)),
    ), // Text
  ), // Padding
), // Row
Padding(
  padding: const EdgeInsets.only(left: 40, bottom: 20),
  child: Text(
    "breast cancer treatments can also \n cause body image issues or side effects that may affect mood and sexual d",
    style: TextStyle(fontSize: 20, color: Color(0xff1d303d)),
  ), // Text
), // Padding
```



```
import 'package:flutter/material.dart';
class TalkingPartner extends StatelessWidget {
  static const String routeName = 'partner screen';
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      backgroundColor: Colors.white,
      appBar: AppBar(
        centerTitle: true,
        elevation: 0,
        backgroundColor: Color(0xffffbcae),
        title: Text(
          "Talking to your Partner",
          style: TextStyle(
            fontSize: 22, fontWeight: FontWeight.bold, color: Colors.white),
        ), // Text
      ), // AppBar
      body: SingleChildScrollView(
        child: Column(
          children: [
            Padding(
              padding: const EdgeInsets.only(top: 8, bottom: 10, right: 90),
              child: Text(
                "Talk to your doctor about breast cancer"
              ), // Text
            ), // Padding
          ],
        ), // Column
      ), // SingleChildScrollView
    ), // Scaffold
  }
}, // TalkingPartner
```



```
Padding(
  padding: const EdgeInsets.only(left: 10, top: 0),
  child: Text(
    "you want to deal with house hold \n chores, if you wish to do it yourself \n or need a hand, or wish to hire",
    style: TextStyle(fontSize: 20, color: Color(0xff1d303d)),
  ), // Text
), // Padding
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 10, top: 10),
      child: Icon(
        Icons.check_box_outlined,
        color: Color(0xffe13495),
      ), // Icon
    ), // Padding
    Padding(
      padding: const EdgeInsets.only(left: 5, top: 10),
      child: Text(
        "Surgery, chemotherapy, and other",
        style: TextStyle(fontSize: 20, color: Color(0xff1d303d)),
      ), // Text
    ), // Padding
  ],
), // Row
```

Partner

```

class Talkingchildren extends StatelessWidget {
  static const String routeName = 'children screen';

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      backgroundColor: Colors.white,
      appBar: AppBar(
        centerTitle: true,
        elevation: 0,
        backgroundColor: Color(0xffff8080),
        title: Text(
          "Talking to your children",
          style: TextStyle(
            fontSize: 22, fontWeight: FontWeight.bold, color: Colors.white), // TextStyle
        ), // Text
      ), // AppBar
      body: SingleChildScrollView(
        child: Column(
          children: [
            Padding(
              padding: const EdgeInsets.only(top: 8, bottom: 10, right: 90),
            ),
            child: Text(
              "related to your family and friends about Breast Cancer"
            )
          ],
        ),
      ),
    );
  }
}

```

```

Padding(
  padding: const EdgeInsets.only(left: 40, top: 0),
  child: Text(
    "Breast cancer is difficult no matter what the age of the child is. But not being honest with them can do more harm than good.",
    style: TextStyle(fontSize: 20, color: Color(0xfffd303d)),
  ), // Text
), // Padding
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 10, top: 10),
      child: Icon(
        Icons.check_box_outlined,
        color: Color(0xffe13495),
      ), // Icon
    ), // Padding
    Padding(
      padding: const EdgeInsets.only(left: 5, top: 10),
      child: Text(
        "Tell them about the disease and the",
        style: TextStyle(fontSize: 20, color: Color(0xfffd303d)),
      ), // Text
    ), // Padding
  ],
), // Row
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 10, top: 10),
      child: Icon(
        Icons.check_box_outlined,
        color: Color(0xffe13495),
      ), // Icon
    ), // Padding
    Padding(
      padding: const EdgeInsets.only(left: 5, top: 10),
      child: Text(
        "kind of treatment you might go through."
        style: TextStyle(fontSize: 20, color: Color(0xfffd303d)),
      ), // Text
    ), // Padding
  ],
), // Row
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 10, top: 10),
      child: Icon(
        Icons.check_box_outlined,
        color: Color(0xffe13495),
      ), // Icon
    ), // Padding
    Padding(
      padding: const EdgeInsets.only(left: 5, top: 10),
      child: Text(
        "going to say in advance and schedule time so you won't be disturbed."
        style: TextStyle(fontSize: 20, color: Color(0xfffd303d)),
      ), // Text
    ), // Padding
  ],
), // Row
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 10, top: 10),
      child: Icon(
        Icons.check_box_outlined,
        color: Color(0xffe13495),
      ), // Icon
    ), // Padding
    Padding(
      padding: const EdgeInsets.only(left: 5, top: 10),
      child: Text(
        "Make them comfortable before bring",
        style: TextStyle(fontSize: 20, color: Color(0xfffd303d)),
      ), // Text
    ), // Padding
  ],
), // Row

```

```

padding: const EdgeInsets.only(left: 10, top: 10),
child: Icon(
  Icons.check_box_outlined,
  color: Color(0xffe13495),
), // Icon
), // Padding
Padding(
  padding: const EdgeInsets.only(left: 5, top: 10),
  child: Text(
    "Tell them about the disease and the",
    style: TextStyle(fontSize: 20, color: Color(0xfffd303d)),
  ), // Text
), // Padding
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 10, top: 10),
      child: Icon(
        Icons.check_box_outlined,
        color: Color(0xffe13495),
      ), // Icon
    ), // Padding
    Padding(
      padding: const EdgeInsets.only(left: 5, top: 10),
      child: Text(
        "kind of treatment you might go through."
        style: TextStyle(fontSize: 20, color: Color(0xfffd303d)),
      ), // Text
    ), // Padding
  ],
), // Row
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 10, top: 10),
      child: Icon(
        Icons.check_box_outlined,
        color: Color(0xffe13495),
      ), // Icon
    ), // Padding
    Padding(
      padding: const EdgeInsets.only(left: 5, top: 10),
      child: Text(
        "going to say in advance and schedule time so you won't be disturbed."
        style: TextStyle(fontSize: 20, color: Color(0xfffd303d)),
      ), // Text
    ), // Padding
  ],
), // Row
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 10, top: 10),
      child: Icon(
        Icons.check_box_outlined,
        color: Color(0xffe13495),
      ), // Icon
    ), // Padding
    Padding(
      padding: const EdgeInsets.only(left: 5, top: 10),
      child: Text(
        "Make them comfortable before bring",
        style: TextStyle(fontSize: 20, color: Color(0xfffd303d)),
      ), // Text
    ), // Padding
  ],
), // Row

```

```

  "Talking to your Family and friends about Breast Cancer",
  style: TextStyle(fontSize: 20, color: Color(0xfffd303d)),
), // Text
), // Padding
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 10, right: 10, bottom: 20, top: 20), // EdgeInsets.only
      child: Image.asset(
        "assets/images/children.jpg",
        fit: BoxFit.cover,
        width: double.infinity,
        height: 200,
      ), // Image.asset
    ), // Padding
  ],
), // Row
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 10, top: 10),
      child: Icon(
        Icons.check_box_outlined,
        color: Color(0xffe13495),
      ), // Icon
    ), // Padding
    Padding(
      padding: const EdgeInsets.only(left: 5, top: 10),
      child: Text(
        "Tell them about the disease and the",
        style: TextStyle(fontSize: 20, color: Color(0xfffd303d)),
      ), // Text
    ), // Padding
  ],
), // Row
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 10, top: 10),
      child: Icon(
        Icons.check_box_outlined,
        color: Color(0xffe13495),
      ), // Icon
    ), // Padding
    Padding(
      padding: const EdgeInsets.only(left: 5, top: 10),
      child: Text(
        "kind of treatment you might go through."
        style: TextStyle(fontSize: 20, color: Color(0xfffd303d)),
      ), // Text
    ), // Padding
  ],
), // Row
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 10, top: 10),
      child: Icon(
        Icons.check_box_outlined,
        color: Color(0xffe13495),
      ), // Icon
    ), // Padding
    Padding(
      padding: const EdgeInsets.only(left: 5, top: 10),
      child: Text(
        "going to say in advance and schedule time so you won't be disturbed."
        style: TextStyle(fontSize: 20, color: Color(0xfffd303d)),
      ), // Text
    ), // Padding
  ],
), // Row
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 10, top: 10),
      child: Icon(
        Icons.check_box_outlined,
        color: Color(0xffe13495),
      ), // Icon
    ), // Padding
    Padding(
      padding: const EdgeInsets.only(left: 5, top: 10),
      child: Text(
        "Make them comfortable before bring",
        style: TextStyle(fontSize: 20, color: Color(0xfffd303d)),
      ), // Text
    ), // Padding
  ],
), // Row

```

```

Padding(
  padding: const EdgeInsets.only(left: 40, top: 0),
  child: Text(
    "Breast cancer is difficult no matter what the age of the child is. But not being honest with them can do more harm than good.",
    style: TextStyle(fontSize: 20, color: Color(0xfffd303d)),
  ), // Text
), // Padding
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 10, top: 10),
      child: Icon(
        Icons.check_box_outlined,
        color: Color(0xffe13495),
      ), // Icon
    ), // Padding
    Padding(
      padding: const EdgeInsets.only(left: 5, top: 10),
      child: Text(
        "Tell them about the disease and the",
        style: TextStyle(fontSize: 20, color: Color(0xfffd303d)),
      ), // Text
    ), // Padding
  ],
), // Row
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 10, top: 10),
      child: Icon(
        Icons.check_box_outlined,
        color: Color(0xffe13495),
      ), // Icon
    ), // Padding
    Padding(
      padding: const EdgeInsets.only(left: 5, top: 10),
      child: Text(
        "kind of treatment you might go through."
        style: TextStyle(fontSize: 20, color: Color(0xfffd303d)),
      ), // Text
    ), // Padding
  ],
), // Row
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 10, top: 10),
      child: Icon(
        Icons.check_box_outlined,
        color: Color(0xffe13495),
      ), // Icon
    ), // Padding
    Padding(
      padding: const EdgeInsets.only(left: 5, top: 10),
      child: Text(
        "going to say in advance and schedule time so you won't be disturbed."
        style: TextStyle(fontSize: 20, color: Color(0xfffd303d)),
      ), // Text
    ), // Padding
  ],
), // Row
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 10, top: 10),
      child: Icon(
        Icons.check_box_outlined,
        color: Color(0xffe13495),
      ), // Icon
    ), // Padding
    Padding(
      padding: const EdgeInsets.only(left: 5, top: 10),
      child: Text(
        "Make them comfortable before bring",
        style: TextStyle(fontSize: 20, color: Color(0xfffd303d)),
      ), // Text
    ), // Padding
  ],
), // Row

```

Children

```

import 'package:flutter/material.dart';

class TalkingRelatives extends StatelessWidget {
  static const String routeName = 'relatives screen';

  @override
  Widget build(BuildContext context) {
    return Scaffold(
      backgroundColor: Colors.white,
      appBar: AppBar(
        centerTitle: true,
        elevation: 0,
        backgroundColor: Color(0xffffffff),
        title: Text(
          "Talking to your Relatives",
          style: TextStyle(
            fontSize: 22, fontWeight: FontWeight.bold, color: Colors.white), // TextStyle
        ), // Text
      ), // AppBar
      body: SingleChildScrollView(
        child: Column(
          children: [
            Padding(
              padding: const EdgeInsets.only(top: 8, bottom: 10, right: 98),
              child: Text(
                "Talking to your Family and Friends about Breast Cancer"
              ), // Text
            ), // Padding
          ],
        ), // Column
      ), // SingleChildScrollView
    ), // Scaffold
  }
}

```

```

padding: const EdgeInsets.only(left: 10, top: 10),
child: Icon(
  Icons.check_box_outlined,
  color: Color(0xffe13495),
), // Icon
), // Padding
Padding(
  padding: const EdgeInsets.only(left: 5, top: 10),
  child: Text(
    "Most relatives would be willing to help",
    style: TextStyle(fontSize: 20, color: Color(0xff1d303d)),
  ), // Text
), // Padding
), // Row
Padding(
  padding: const EdgeInsets.only(left: 40, top: 0),
  child: Text(
    "in any way possible. Let them know that you will reach out whenever you need them."
    style: TextStyle(fontSize: 20, color: Color(0xff1d303d)),
  ), // Text
), // Padding
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 10, top: 10),
      child: Text(
        "Be honest about your feelings."
        style: TextStyle(fontSize: 20, color: Color(0xff1d303d)),
      ), // Text
    ), // Padding
  ],
), // Row
), // Column
), // SingleChildScrollView
), // Scaffold

```

```

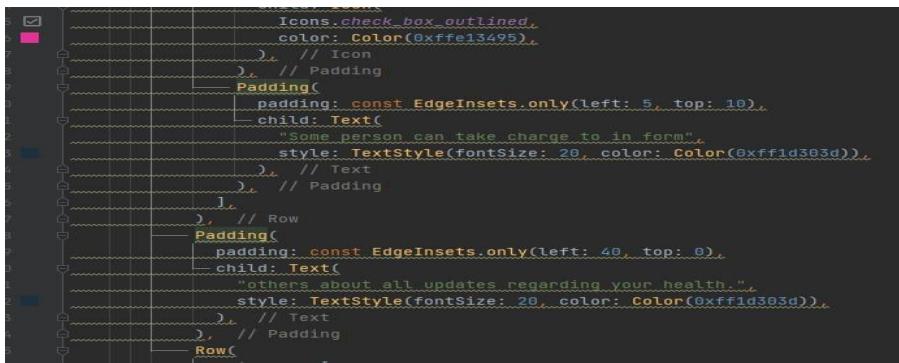
Row(
  padding: const EdgeInsets.only(
    left: 15, right: 15, bottom: 20, top: 20), // EdgeInsets.only
  child: Image.asset(
    'assets/images/relatives.jpg',
    fit: BoxFit.cover,
    width: double.infinity,
    height: 200,
  ), // Image.asset
), // Padding
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 10, top: 10),
      child: Icon(
        Icons.check_box_outlined,
        color: Color(0xffe13495),
      ), // Icon
    ), // Padding
    Padding(
      padding: const EdgeInsets.only(left: 5, top: 10),
      child: Text(
        "Take some time to figure out who else to",
        style: TextStyle(fontSize: 20, color: Color(0xff1d303d)),
      ), // Text
    ), // Padding
  ],
), // Row

```

```

), // Column
), // SingleChildScrollView
), // Scaffold

```



Relatives

```
class ManagingStress extends StatelessWidget {  
  static const String routeName = 'stress_screen';  
  
  @override  
  Widget build(BuildContext context) {  
    return Scaffold(  
      backgroundColor: Colors.white,  
      appBar: AppBar(  
        centerTitle: true,  
        elevation: 0,  
        backgroundColor: Color(0xffffbc4a),  
        title: Text(  
          "Managing Stress",  
          style: TextStyle(  
            fontSize: 20, fontWeight: FontWeight.bold, color: Colors.white), // TextStyle  
        ), // Text  
      ), // AppBar  
      body: SingleChildScrollView(  
        child: Column(  
          children: [  
            Padding(  
              padding: const EdgeInsets.only(  
                left: 15, right: 15, bottom: 20, top: 20), // EdgeInsets.only  
              child: Image.asset(  
                "stress_bg.jpg",  
                fit: BoxFit.cover,  
              ), // Image  
            ),  
            Padding(  
              padding: const EdgeInsets.all(10),  
              child: Text(  
                "Your Doctor may suggest consulting a Psychologist to help you cope with the emotional stress in related to your symptoms.",  
                style: TextStyle(fontSize: 20, color: Color(0xfffe1349)),  
                textAlign: TextAlign.center,  
              ), // Text  
            ), // Padding  
            Container(  
              padding: const EdgeInsets.all(10),  
              child: Center(  
                child: Padding(  
                  padding: const EdgeInsets.all(10),  
                  child: Icon(  
                    Icons.arrow_downward_sharp,  
                    color: Color(0xfffe1349),  
                    size: 70,  
                  ), // Icon  
                ), // Padding  
                padding: const EdgeInsets.all(10),  
                child: Center(  
                  child: Container(  
                    decoration: BoxDecoration(  
                      borderRadius: BorderRadius.circular(10),  
                      color: Color(0xffffbc4a),  
                    ), // BoxDecoration  
                  ), // Container  
                ), // Center  
              ), // Container  
            ), // Padding  
            Padding(  
              padding: const EdgeInsets.all(10),  
              child: Text(  
                "Psychologists can help you become more fully engaged in your own treatment.",  
                style: TextStyle(fontSize: 20, color: Color(0xfffe1349)),  
                textAlign: TextAlign.center,  
              ), // Text  
            ), // Padding  
            Padding(  
              padding: const EdgeInsets.only(left: 10, right: 10, bottom: 20), // EdgeInsets.only  
              child: Center(  
                child: Container(  
                  decoration: BoxDecoration(  
                    borderRadius: BorderRadius.circular(10),  
                    color: Color(0xffffbc4a),  
                  ), // BoxDecoration  
                  child: Padding(  
                    padding: const EdgeInsets.all(15),  
                    child: Text(  
                      "Counseling is extremely important. It involves discussion about the diagnosis and various treatment options.",  
                      style: TextStyle(fontSize: 20, color: Color(0xfffe1349)),  
                      textAlign: TextAlign.center,  
                    ), // Text  
                  ), // Padding  
                ), // Container  
              ), // Center  
            ), // Padding  
            Padding(  
              padding: const EdgeInsets.only(left: 10, right: 10, bottom: 20), // EdgeInsets.only  
              child: Center(  
                child: Container(  
                  decoration: BoxDecoration(  
                    borderRadius: BorderRadius.circular(10),  
                    color: Color(0xffffbc4a),  
                  ), // BoxDecoration  
                  child: Padding(  
                    padding: const EdgeInsets.all(15),  
                    child: Text(  
                      "Psychologists can help you become more fully engaged in your own treatment.",  
                      style: TextStyle(fontSize: 20, color: Color(0xfffe1349)),  
                      textAlign: TextAlign.center,  
                    ), // Text  
                  ), // Padding  
                ), // Container  
              ), // Center  
            ), // Padding  
            Padding(  
              padding: const EdgeInsets.all(10),  
              child: Text(  
                "Psychologists can help you become more fully engaged in your own treatment.",  
                style: TextStyle(fontSize: 20, color: Color(0xfffe1349)),  
                textAlign: TextAlign.center,  
              ), // Text  
            ), // Padding  
          ],  
        ), // Column  
      ), // Body  
    ), // Scaffold  
  ) // StatelessWidget
```

```
padding: const EdgeInsets.only(left: 10, right: 10),  
child: Text(  
  "Side effects such as insomnia, anxiety",  
  style: TextStyle(fontSize: 20, color: Color(0xfffe1349)),  
), // Text  
), // Padding  
, // Row  
padding: const EdgeInsets.only(left: 40),  
child: Text(  
  "changes and mood swings. Hormone level changes can influence your emotions, and weight gain can be discouraging",  
  style: TextStyle(fontSize: 20, color: Color(0xfffe1349)),  
, // Text  
, // Padding  
Padding(  
  padding: const EdgeInsets.only(top: 20, left: 20, right: 20),  
  child: Center(  
    child: Container(  
      decoration: BoxDecoration(  
        borderRadius: BorderRadius.circular(10),  
        color: Color(0xffffbc4a),  
      ), // BoxDecoration  
      child: Padding(  
        padding: const EdgeInsets.all(20),  
      ), // Padding  
    ), // Container  
  ), // Center  
), // Padding  
Padding(  
  padding: const EdgeInsets.all(20),  
  child: Text(  
    "Psychologists can help you become more fully engaged in your own treatment.",  
    style: TextStyle(fontSize: 20, color: Color(0xfffe1349)),  
    textAlign: TextAlign.center,  
, // Text  
, // Padding  
  ), // Center  
, // Padding  
Padding(  
  padding: const EdgeInsets.all(20),  
  child: Icon(  
    Icons.arrow_downward_sharp,  
    color: Color(0xfffe1349),  
  ), // Icon  
), // Padding  
), // Column  
), // Body  
), // Scaffold  
) // StatelessWidget
```

```
padding: const EdgeInsets.all(10),  
child: Text(  
  "Your Doctor may suggest consulting a Psychologist to help you cope with the emotional stress in related to your symptoms.",  
  style: TextStyle(fontSize: 20, color: Color(0xfffe1349)),  
  textAlign: TextAlign.center,  
, // Text  
, // Padding  
), // Container  
, // Center  
), // Padding  
Padding(  
  padding: const EdgeInsets.all(10),  
  child: Icon(  
    Icons.arrow_downward_sharp,  
    color: Color(0xfffe1349),  
    size: 70,  
  ), // Icon  
, // Padding  
Padding(  
  padding: const EdgeInsets.all(10),  
  child: Center(  
    child: Container(  
      decoration: BoxDecoration(  
        borderRadius: BorderRadius.circular(10),  
        color: Color(0xffffbc4a),  
      ), // BoxDecoration  
    ), // Container  
  ), // Center  
), // Padding  
Padding(  
  padding: const EdgeInsets.all(10),  
  child: Text(  
    "Psychologists can help you become more fully engaged in your own treatment.",  
    style: TextStyle(fontSize: 20, color: Color(0xfffe1349)),  
    textAlign: TextAlign.center,  
  ), // Text  
), // Padding  
Padding(  
  padding: const EdgeInsets.only(left: 10, right: 10, bottom: 20), // EdgeInsets.only  
  child: Center(  
    child: Container(  
      decoration: BoxDecoration(  
        borderRadius: BorderRadius.circular(10),  
        color: Color(0xffffbc4a),  
      ), // BoxDecoration  
      child: Padding(  
        padding: const EdgeInsets.all(15),  
        child: Text(  
          "Counseling is extremely important. It involves discussion about the diagnosis and various treatment options.",  
          style: TextStyle(fontSize: 20, color: Color(0xfffe1349)),  
          textAlign: TextAlign.center,  
        ), // Text  
      ), // Padding  
    ), // Container  
  ), // Center  
), // Padding  
Padding(  
  padding: const EdgeInsets.only(left: 10, right: 10, bottom: 20), // EdgeInsets.only  
  child: Center(  
    child: Container(  
      decoration: BoxDecoration(  
        borderRadius: BorderRadius.circular(10),  
        color: Color(0xffffbc4a),  
      ), // BoxDecoration  
      child: Padding(  
        padding: const EdgeInsets.all(15),  
        child: Text(  
          "Psychologists can help you become more fully engaged in your own treatment.",  
          style: TextStyle(fontSize: 20, color: Color(0xfffe1349)),  
          textAlign: TextAlign.center,  
        ), // Text  
      ), // Padding  
    ), // Container  
  ), // Center  
), // Padding  
Padding(  
  padding: const EdgeInsets.all(10),  
  child: Text(  
    "Psychologists can help you become more fully engaged in your own treatment.",  
    style: TextStyle(fontSize: 20, color: Color(0xfffe1349)),  
    textAlign: TextAlign.center,  
  ), // Text  
), // Padding  
) // StatelessWidget
```

```
padding: const EdgeInsets.all(10),  
child: Text(  
  "Psychologists can help you become more fully engaged in your own treatment.",  
  style: TextStyle(fontSize: 20, color: Color(0xfffe1349)),  
  textAlign: TextAlign.center,  
, // Text  
, // Padding  
), // Center  
, // Padding  
Padding(  
  padding: const EdgeInsets.all(20),  
  child: Text(  
    "Psychologists can help you become more fully engaged in your own treatment.",  
    style: TextStyle(fontSize: 20, color: Color(0xfffe1349)),  
    textAlign: TextAlign.center,  
, // Text  
, // Padding  
  ), // Center  
, // Padding  
Padding(  
  padding: const EdgeInsets.all(20),  
  child: Icon(  
    Icons.arrow_downward_sharp,  
    color: Color(0xfffe1349),  
  ), // Icon  
), // Padding  
), // Column  
), // Body  
), // Scaffold  
) // StatelessWidget
```

```
padding:  
padding: EdgeInsets.all(10),  
child: Icon(  
  Icons.arrow_downward_sharp,  
  color: Color(0xfffe1349),  
  size: 70,  
, // Icon  
, // Padding  
Padding(  
  padding: EdgeInsets.all(10),  
  child: Center(  
    child: Container(  
      decoration: BoxDecoration(  
        borderRadius: BorderRadius.circular(10),  
        color: Color(0xffffbc4a),  
      ), // BoxDecoration  
    ), // Container  
  ), // Center  
), // Padding  
Padding(  
  padding: const EdgeInsets.only(left: 10, right: 10, bottom: 20), // EdgeInsets.only  
  child: Center(  
    child: Container(  
      decoration: BoxDecoration(  
        borderRadius: BorderRadius.circular(10),  
        color: Color(0xffffbc4a),  
      ), // BoxDecoration  
      child: Padding(  
        padding: const EdgeInsets.all(15),  
        child: Text(  
          "Counseling is extremely important. It involves discussion about the diagnosis and various treatment options.",  
          style: TextStyle(fontSize: 20, color: Color(0xfffe1349)),  
          textAlign: TextAlign.center,  
        ), // Text  
      ), // Padding  
    ), // Container  
  ), // Center  
), // Padding  
Padding(  
  padding: const EdgeInsets.only(left: 10, right: 10, bottom: 20), // EdgeInsets.only  
  child: Center(  
    child: Container(  
      decoration: BoxDecoration(  
        borderRadius: BorderRadius.circular(10),  
        color: Color(0xffffbc4a),  
      ), // BoxDecoration  
      child: Padding(  
        padding: const EdgeInsets.all(15),  
        child: Text(  
          "Psychologists can help you become more fully engaged in your own treatment.",  
          style: TextStyle(fontSize: 20, color: Color(0xfffe1349)),  
          textAlign: TextAlign.center,  
        ), // Text  
      ), // Padding  
    ), // Container  
  ), // Center  
), // Padding  
Padding(  
  padding: const EdgeInsets.all(10),  
  child: Text(  
    "Psychologists can help you become more fully engaged in your own treatment.",  
    style: TextStyle(fontSize: 20, color: Color(0xfffe1349)),  
    textAlign: TextAlign.center,  
  ), // Text  
), // Padding  
), // StatelessWidget
```

```
width: double.infinity,  
height: 200,  
, // Image asset  
, // Padding  
Row(  
  children: [  
    Padding(  
      padding: const EdgeInsets.only(left: 10, top: 10),  
      child: Icon(  
        Icons.check_box_outlined,  
        color: Color(0xfffe1349),  
      ), // Icon  
    ), // Padding  
    Padding(  
      padding: const EdgeInsets.only(left: 5, top: 10),  
      child: Text(  
        "As the patient, you need to focus on the",  
        style: TextStyle(fontSize: 20, color: Color(0xfffe1349)),  
      ), // Text  
    ), // Padding  
  ], // Row  
), // Padding  
), // Body  
), // Scaffold  
) // StatelessWidget
```

Managing stress

```

children: [
  Padding(
    padding: const EdgeInsets.only(left: 35),
    child: Text(
      "Heredity",
      style: TextStyle(fontSize: 18, color: Colors.black87),
    ),
  ), // Padding
  Padding(
    padding: const EdgeInsets.only(left: 45),
    child: Text(
      "Lifestyle",
      style: TextStyle(fontSize: 18, color: Colors.black87),
    ),
  ), // Padding
  Padding(
    padding: const EdgeInsets.only(left: 80),
    child: Text(
      "Age",
      style: TextStyle(fontSize: 18, color: Colors.black87),
    ),
  ), // Padding
]

```

```

import 'package:flutter/material.dart';

class RiskFactors extends StatelessWidget {
  static const String routeName = 'Risk Factors';
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      backgroundColor: Colors.white,
      appBar: AppBar(
        elevation: 0,
        backgroundColor: Color(0xffffffff),
        centerTitle: true,
        title: Text(
          "Risk Factors",
          style: TextStyle(
            fontSize: 18,
            fontWeight: FontWeight.bold,
            color: Colors.white,
          ),
        ),
      ),
      body: SafeArea(
        child: Column(
          children: [
            Padding(
              padding: const EdgeInsets.all(10),

```

```

  Padding(
    padding: const EdgeInsets.only(top: 40, left: 30, right: 10),
    child: Image.asset(
      "assets/images/oedentity.jpg",
      width: 70,
      height: 70,
    ),
  ), // Padding
  Padding(
    padding: const EdgeInsets.only(top: 40, left: 40, right: 0),
    child: Image.asset(
      "assets/images/pregnancy.jpg",
      width: 70,
      height: 70,
    ),
  ), // Padding
  Padding(
    padding: const EdgeInsets.only(top: 40, left: 40),
    child: Image.asset(
      "assets/images/diabetes.jpg",
      width: 70,
      height: 70,
    ),
  ), // Padding
],
)

```

```

  child: Text(
    "Breast Cancer",
    style: TextStyle(
      fontSize: 22,
      fontWeight: FontWeight.bold,
      color: Colors.black87,
    ),
  ), // Text
), // Center
), // Padding
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(top: 12, left: 30, right: 10),
      child: Image.asset(
        "assets/images/heredity.jpg",
        width: 70,
        height: 70,
      ),
    ), // Padding
    Padding(
      padding: const EdgeInsets.only(top: 12, left: 40, right: 20),
      child: Image.asset(
        "assets/images/lifestyle.jpg",
        width: 50,
        height: 50,
      ),
    ), // Padding
  ],
)

```

```

Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(top: 40, left: 80, right: 25),
      child: Image.asset(
        "assets/images/hypertension.jpg",
        width: 70,
        height: 70,
      ),
    ), // Padding
    Padding(
      padding: const EdgeInsets.only(top: 40, left: 40),
      child: Image.asset(
        "assets/images/hermones.jpg",
        width: 70,
        height: 70,
      ),
    ), // Padding
  ],
), // Row
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 70),
      child: Text(
        "Essential hypertension",
        style: TextStyle(

```

```
padding: const EdgeInsets.only(left: 50),
    child: Text(
      "Hormones",
      style: TextStyle(fontSize: 18, color: Colors.black54),
    ), // Text
  ), // Padding
Row(
  padding: const EdgeInsets.only(
    top: 50, left: 10, bottom: 10, right: 10), // EdgeInsets.only
  child: Center(
    child: Text(
      "How to reduce your Risk",
      style: TextStyle(
        fontSize: 20,
        fontWeight: FontWeight.bold,
        color: Colors.black54), // TextStyle
    ), // Text
  ), // Center
), // Padding
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(top: 30, left: 45, right: 40),

```

```
width: 70,
height: 70,
), // Image.asset
), // Padding
Padding(
  padding: const EdgeInsets.only(top: 30, left: 80),
  child: Image.asset(
    "assets/images/breastfeed.jpg",
    width: 60,
    height: 60,
  ), // Image.asset
), // Padding
), // Row
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 40),
      child: Text(
        "Don't Smoke",
        style: TextStyle(fontSize: 18, color: Colors.black54),
      ), // Text
    ), // Padding
  ], // children
), // Row

```

```
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 35),
      child: Text(
        "Alcohol",
        style: TextStyle(fontSize: 18, color: Colors.black54),
      ), // Text
    ), // Padding
    Padding(
      padding: const EdgeInsets.only(left: 50),
      child: Text(
        "Pregnancy",
        style: TextStyle(fontSize: 18, color: Colors.black54),
      ), // Text
    ), // Padding
    Padding(
      padding: const EdgeInsets.only(left: 50),
      child: Text(
        "Cigarettes",
        style: TextStyle(fontSize: 18, color: Colors.black54),
      ), // Text
    ), // Padding
  ], // children
), // Row

```

```
), // Padding
), // Row
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 40, bottom: 20),
      child: Text(
        "Avoid alcohol",
        style: TextStyle(fontSize: 18, color: Colors.black54),
      ), // Text
    ), // Padding
    Padding(
      padding: const EdgeInsets.only(left: 60, bottom: 20),
      child: Text(
        "Avoid exposure to radiation",
        style: TextStyle(fontSize: 18, color: Colors.black54),
      ), // Text
    ), // Padding
  ], // children
), // Row
Column(
  mainAxisAlignment: MainAxisAlignment.end,
  children: [
    SingleChildScrollView(
      child: Scaffold(

```

```
), // Row
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(top: 30, left: 45, right: 40),
      child: Image.asset(
        "assets/images/control_weight.jpg",
        width: 70,
        height: 70,
      ), // Image.asset
    ), // Padding
    Padding(
      padding: const EdgeInsets.only(top: 30, left: 80),
      child: Image.asset(
        "assets/images/physically.jpg",
        width: 70,
        height: 60,
      ), // Image.asset
    ), // Padding
  ], // children
), // Row
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 40),

```

Risk factors

```

    _image = selectedImage;
    _result = null;
  );
}

Future<void> _analyzeImage() async {
  if (_image == null) return;
  setState(() {
    isAnalyzing = true;
  });

  final url = Uri.parse('http://127.0.0.1:8000/predict');
  var request = http.MultipartRequest('POST', url);
  var files = await http.MultipartFile.fromPath(
    'image',
    _image.path,
  );
  request.files.add(files);

  var response = await request.send();
  if (response.statusCode == 200) {
    var responseData = await response.stream.bytesToString();
    var jsonResponse = json.decode(responseData);
    setState(() {
      ...
    });
  }
}

```

```

var response = await request.send();

if (response.statusCode == 200) {
  var responseData = await response.stream.bytesToString();
  var jsonResponse = json.decode(responseData);
  setState(() {
    _result = jsonResponse['result'];
  });
} else {
  setState(() {
    _result = 'Error analyzing image';
  });
}

setState(() {
  isAnalyzing = false;
});

@Override
Widget build(BuildContext context) {
  return Scaffold(
    appBar: AppBar(
      backgroundColor: Color(0xffFFB7AE),
      title: const Text('Check Up'),
    ),
  );
}

```

```

Padding(
  padding: const EdgeInsets.only(top: 20),
  child: MaterialButton(
    elevation: 0.0,
    color: Color(0xffFFB7AE),
    padding: const EdgeInsets.symmetric(
      vertical: 17, horizontal: 40), // EdgeInsets.symmetric
    shape: OutlineInputBorder(
      borderRadius: BorderRadius.circular(10),
      borderSide: BorderSide.none,
    ), // OutlineInputBorder
    onPressed: () => _pickImage(ImageSource.gallery),
    child: Row(
      mainAxisAlignment: MainAxisAlignment.spaceEvenly,
      children: [
        Icon(Icons.image, color: Colors.white),
        SizedBox(width: 20),
        Text(
          'Upload from gallery',
          style: TextStyle(
            color: Colors.white,
            fontSize: 14,
            fontWeight: FontWeight.bold,
          ), // TextStyle
        ), // Text
      ], // Row
    ),
  ),
)

```

```

import 'dart:async';
import 'dart:convert';
import 'dart:io';
import 'package:flutter/material.dart';
import 'package:http/http.dart' as http;
import 'package:image_picker/image_picker.dart';

class CheckUpScreen extends StatefulWidget {
  static const String routeName = 'checkup_screen';

  @override
  State<CheckUpScreenState> createState() => _CheckUpScreenState();
}

class _CheckUpScreenState extends State<CheckUpScreen> {
  XFile? _image;
  String? _result;
  bool isAnalyzing = false;
  final ImagePicker _picker = ImagePicker();

  Future<void> pickImage(ImageSource source) async {
    final XFile? selectedImage = await _picker.pickImage(source: source);
    if (selectedImage != null) {
      setState(() {
        _image = selectedImage;
        _result = null;
      });
    }
  }
}

@Override
Widget build(BuildContext context) {
  return Scaffold(
    appBar: AppBar(
      backgroundColor: Color(0xffFFB7AE),
      title: const Text('Check Up'),
    ), // AppBar
    body: Container(
      color: Colors.white,
      child: Center(
        child: Padding(
          padding: const EdgeInsets.only(
            top: 0, left: 20, right: 20, bottom: 20), // EdgeInsets.only
          child: Column(
            mainAxisSize: MainAxisSize.center,
            children: [
              if (_image != null)
                Image.file(File(_image!.path)),
              if (_result != null)
                Padding(
                  padding: const EdgeInsets.only(left: 70, top: 20),
                  child: Text(
                    'Prediction is: ',
                  ),
                )
            ],
          ),
        ),
      ),
    ),
  );
}

```

```

Padding(
  padding: const EdgeInsets.only(top: 20),
  child: MaterialButton(
    elevation: 0.0,
    color: Color(0xffFFB7AE),
    padding: const EdgeInsets.symmetric(
      vertical: 17, horizontal: 40), // EdgeInsets.symmetric
    shape: OutlineInputBorder(
      borderRadius: BorderRadius.circular(10),
      borderSide: BorderSide.none,
    ), // OutlineInputBorder
    onPressed: () => _pickImage(ImageSource.camera),
    child: Row(
      mainAxisAlignment: MainAxisAlignment.spaceEvenly,
      children: [
        Icon(Icons.camera_alt_outlined, color: Colors.white),
        SizedBox(width: 20),
        Text(
          'Upload from Camera',
          style: TextStyle(
            color: Colors.white,
            fontSize: 14,
            fontWeight: FontWeight.bold,
          ), // TextStyle
        ), // Text
      ], // Row
    ),
  ),
)

```

```

@Override
Widget build(BuildContext context) {
  return Scaffold(
    appBar: AppBar(
      backgroundColor: Color(0xffFFB7AE),
      title: const Text('Check Up'),
    ), // AppBar
    body: Container(
      color: Colors.white,
      child: Center(
        child: Padding(
          padding: const EdgeInsets.only(
            top: 0, left: 20, right: 20, bottom: 20), // EdgeInsets.only
          child: Column(
            mainAxisSize: MainAxisSize.center,
            children: [
              if (_image != null)
                Image.file(File(_image!.path)),
              if (_result != null)
                Padding(
                  padding: const EdgeInsets.only(left: 70, top: 20),
                  child: Text(
                    'Prediction is: ',
                  ),
                )
            ],
          ),
        ),
      ),
    ),
  );
}

```

Check up

```
class _SettingsTabState extends State<SettingsTab> {
  @override
  Widget build(BuildContext context) {
    var provider = Provider.of<AppConfigProvider>(context);
    return Scaffold(
      appBar: AppBar(
        backgroundColor: Color(0xffFB8CAE),
        centerTitle: true,
        title: Text(
          "Settings",
          style: TextStyle(
            fontSize: 25, fontWeight: FontWeight.bold, color: Colors.white),
        ),
      ), // AppBar
      // Add Material widget here
      body: Container(
        margin: EdgeInsets.all(15),
        child: Column(
          mainAxisAlignment: MainAxisAlignment.start,
          children: [
            Text(
              "Language",
              style: Theme.of(context).textTheme.subtitle1, // Changed to subtitle1
            ),
          ],
        ),
      ),
    );
  }
}
```

```
void showLanguageBottomSheet() {
  showModalBottomSheet(
    context: context, builder: (context) => LanguageBottomSheet());
}

void showThemeBottomSheet() {
  showModalBottomSheet(
    context: context, builder: (context) => ThemeBottomSheet());
}
```

```
class LanguageBottomSheet extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Container(
      padding: EdgeInsets.all(10),
      decoration: BoxDecoration(
        color: provider.appTheme == ThemeMode.dark
          ? MyTheme.primaryDark
          : Theme.of(context).primaryColor,
        borderRadius: BorderRadius.circular(15)), // BoxDecoration
      child: Row(
        mainAxisAlignment: MainAxisAlignment.spaceBetween,
        children: [
          Text(
            "Theme",
            style: Theme.of(context).textTheme.subtitle1, // Changed to subtitle1
          ),
          Text(
            "provider.appTheme == MyTheme.darkTheme ? "Dark" : "Light", // Capitalized Dark and Light
            style: Theme.of(context).textTheme.subtitle1, // Changed to subtitle1
          ),
        ],
      ),
    );
  }
}
```

```
class ThemeBottomSheet extends StatelessWidget {
  @override
  Widget build(BuildContext context) {
    return Container(
      padding: EdgeInsets.all(10),
      decoration: BoxDecoration(
        color: provider.appTheme == MyTheme.darkTheme
          ? MyTheme.primaryDark
          : Theme.of(context).primaryColor,
        borderRadius: BorderRadius.circular(15)), // BoxDecoration
      child: Row(
        mainAxisAlignment: MainAxisAlignment.spaceBetween,
        children: [
          Text(
            "Theme",
            style: Theme.of(context).textTheme.subtitle1, // Changed to subtitle1
          ),
          Text(
            "provider.appTheme == MyTheme.darkTheme ? "Dark" : "Light", // Capitalized Dark and Light
            style: Theme.of(context).textTheme.subtitle1, // Changed to subtitle1
          ),
        ],
      ),
    );
  }
}
```

Know more

```
import 'package:flutter/material.dart';

class SelfExamination extends StatelessWidget {
  static const String routeName = 'self_examination';
  @override
  Widget build(BuildContext context) {
    return Scaffold(
      appBar: AppBar(
        backgroundColor: Color(0xffFB8CAE4),
        centerTitle: true,
        title: Column(
          children: [
            Text(
              "Self Examination",
              style: TextStyle(
                fontSize: 22,
                fontWeight: FontWeight.bold,
                color: Colors.white),
              // TextStyle
            ),
          ],
        ),
      ),
      body: SingleChildScrollView(
        child: Column(
          children: [
            Row(
              children: [
                Padding(
                  padding: const EdgeInsets.only(left: 10, right: 10),
                  child: Text(
                    "Wash your hands with warm water and dry them completely before you begin the examination. If you have any skin condition like eczema or psoriasis, wash those areas with extra care and dry them well.",
                    style: TextStyle(fontSize: 16, color: Colors.black),
                  ),
                ),
              ],
            ),
            Row(
              children: [
                Padding(
                  padding: const EdgeInsets.only(left: 10, right: 10),
                  child: Text(
                    "Check your breast for any changes in size, shape, or texture. Look for any lumps, thickening, or discharge from the nipple. If you find anything unusual, stop the examination and consult a doctor immediately.",
                    style: TextStyle(fontSize: 16, color: Colors.black),
                  ),
                ),
              ],
            ),
            Row(
              children: [
                Padding(
                  padding: const EdgeInsets.only(left: 10, right: 10),
                  child: Text(
                    "Check your armpit for any swollen lymph nodes. If you find any, stop the examination and consult a doctor immediately.",
                    style: TextStyle(fontSize: 16, color: Colors.black),
                  ),
                ),
              ],
            ),
            Row(
              children: [
                Padding(
                  padding: const EdgeInsets.only(left: 10, right: 10),
                  child: Text(
                    "Check your entire body for any changes in skin color or texture. Look for any rashes, blisters, or sores. If you find anything unusual, stop the examination and consult a doctor immediately.",
                    style: TextStyle(fontSize: 16, color: Colors.black),
                  ),
                ),
              ],
            ),
            Row(
              children: [
                Padding(
                  padding: const EdgeInsets.only(left: 10, right: 10),
                  child: Text(
                    "If you find any abnormalities, stop the examination and consult a doctor immediately. Do not self-diagnose or treat any health issues without consulting a healthcare professional. If you have any questions or concerns, do not hesitate to ask your healthcare provider for guidance and support.",
                    style: TextStyle(fontSize: 16, color: Colors.black),
                  ),
                ),
              ],
            ),
          ],
        ),
      ),
    );
  }
}
```

```
), // Padding
Padding(
  padding: const EdgeInsets.only(bottom: 20),
  child: Row(
    mainAxisAlignment: MainAxisAlignment.spaceEvenly,
    children: [
      Padding(
        padding: const EdgeInsets.only(left: 40, top: 0),
        child: Text(
          "Change in skin color or texture",
          style: TextStyle(fontSize: 20, color: Color(0xff1d303d)),
        ),
      ),
      // Text
      Padding(
        padding: const EdgeInsets.only(left: 40, top: 5),
        child: Text(
          "Nipple discharge or leakage of any fluid",
          style: TextStyle(fontSize: 20, color: Color(0xff1d303d)),
        ),
      ),
      // Text
    ],
  ),
), // Row
), // Padding
), // Column
), // SingleChildScrollView
```

```
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 30, top: 5),
      child: Text(
        "Examine Breast\\nand armpit with\\nraised arm",
        style: TextStyle(fontSize: 20, color: Color(0xff1d303d)),
      ),
    ),
    // Text
  ],
), // Row
Padding(
  padding: const EdgeInsets.only(left: 60, top: 5),
  child: Text(
    "Use Fingertips \\nwith massage oil \\nor shower gel",
    style: TextStyle(fontSize: 20, color: Color(0xff1d303d)),
  ),
), // Text
), // Row
Padding(
  padding: const EdgeInsets.only(top: 20),
  child: Row(
    mainAxisAlignment: MainAxisAlignment.spaceEvenly,
    children: [
      Image.asset(
        "assets/images/photo_upDown.jpg",
        width: 180,
      ),
    ],
  ),
), // Row
), // Column
), // body
```

```
body: SingleChildScrollView(
  child: Column(
    children: [
      Padding(
        padding: const EdgeInsets.only(
          left: 10, bottom: 20, right: 10, left: 10),
        child: Text(
          "Once a month, please follow the below mentioned steps to check for any lumps, discomfort, or any other irregularities in your breasts. If you find any abnormalities, stop the examination and consult a doctor immediately.",
          style: TextStyle(fontSize: 22, color: Color(0xff1d303d)),
        ),
      ),
      Row(
        children: [
          Image.asset(
            "assets/images/photo_examine.jpg",
            width: 180,
            height: 150,
          ),
          // Image.asset
          Image.asset(
            "assets/images/photo_finger.jpg",
            width: 180,
            height: 150,
          ),
        ],
      ),
      Row(
        children: [
          Image.asset(
            "assets/images/photo_examine.jpg",
            width: 180,
            height: 150,
          ),
          // Image.asset
          Image.asset(
            "assets/images/photo_finger.jpg",
            width: 180,
            height: 150,
          ),
        ],
      ),
    ],
  ),
), // body
```

```
    child: Text(
      "Examine breasts in\nthe mirror for\nlumps or skin\ndimpling",
      style: TextStyle(fontSize: 20, color: Color(0xffffd303d)),
    ), // Text
  ), // Padding
  ], // Row
), // Padding
Padding(
  padding: const EdgeInsets.only(top: 20),
  child: Row(
    children: [
      Image.asset(
        "assets/images/photo_skinColor.jpg",
        width: 180,
        height: 150,
      ), // Image.asset
      Image.asset(
        "assets/images/photo_fluid.jpg",
        width: 180,
        height: 150,
      ), // Image.asset
    ],
  ), // Row
), // Padding
Padding(

```

```
    ), // Row
  ), // Padding
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 65, top: 0),
      child: Text(
        "Circles",
        style: TextStyle(fontSize: 20, color: Color(0xffffd303d)),
      ),
    ),
  ],

```

```
    ), // Row
  ), // Padding
Row(
  children: [
    Padding(
      padding: const EdgeInsets.only(top: 20),
      child: Row(
        children: [
          Image.asset(
            "assets/images/photo_upDown.jpg",
            width: 180,
            height: 150,
          ), // Image.asset
          Image.asset(
            "assets/images/photo_start.jpg",
            width: 180,
            height: 150,
          ), // Image.asset
        ],
      ), // Row
    ), // Padding
  ), // Row
  children: [
    Padding(
      padding: const EdgeInsets.only(left: 35, top: 0),
      child: Text(
        "Up and Down",
        style: TextStyle(fontSize: 20, color: Color(0xffffd303d)),
      ),
    ),
  ],

```

Self Examination

```
titleLarge: TextStyle(
  fontSize: 22,
  fontWeight: FontWeight.bold,
  color: whiteColor,
), // TextStyle
titleMedium: TextStyle(
  fontSize: 20,
  fontWeight: FontWeight.bold,
  color: whiteColor,
), // TextStyle
titleSmall: TextStyle(
  fontSize: 18,
  fontWeight: FontWeight.bold,
  color: whiteColor,
), // TextStyle
), // TextTheme
); // ThemeData

static ThemeData lightTheme = ThemeData(
  primaryColor: primaryLight,
  scaffoldBackgroundColor: backgroundLight,
  appBarTheme: AppBarTheme(
    backgroundColor: primaryLight,
    elevation: 0,
  ), // AppBarTheme
  scaffoldBackgroundColor: backgroundLight,
  appBarTheme: AppBarTheme(
    backgroundColor: primaryLight,
    elevation: 0,
  ), // AppBarTheme
  bottomNavigationBarTheme: BottomNavigationBarThemeData(
    selectedItemColor: primaryLight,
    unselectedItemColor: grayColor,
    backgroundColor: Colors.transparent,
    elevation: 0,
  ), // BottomNavigationBarThemeData
  floatingActionButtonTheme: FloatingActionButtonThemeData(
    backgroundColor: primaryLight,
    shape: StadiumBorder(
      side: BorderSide(
        color: MyTheme.whiteColor,
        width: 6,
      ), // BorderSide
    ), // StadiumBorder
  ), // FloatingActionButtonThemeData
  textTheme: TextTheme(
    titleLarge: TextStyle(
      fontSize: 22,
      fontWeight: FontWeight.bold,
      color: whiteColor,
    ), // TextStyle
  ), // TextTheme
  static Color whiteColor = const Color(0xffffffff);
  static Color backgroundDark = const Color(0xff00001e);
  static Color darkBlack = const Color(0xdad2ce0);
  static Color grayColor = const Color(0xff1a1922);

  static ThemeData darkTheme = ThemeData(
    primaryColor: primaryDark,
    scaffoldBackgroundColor: Colors.transparent,
    appBarTheme: AppBarTheme(
      backgroundColor: Colors.transparent,
      elevation: 0,
      centerTitle: true,
      iconTheme: IconThemeData(
        color: MyTheme.whiteColor,
      ), // IconThemeData
    ), // AppBarTheme
    bottomNavigationBarTheme: BottomNavigationBarThemeData(
      selectedItemColor: whiteColor,
      unselectedItemColor: blackColor,
    ), // BottomNavigationBarThemeData
    textTheme: TextTheme(
      titleLarge: TextStyle(
        fontSize: 22,
        fontWeight: FontWeight.bold,
        color: whiteColor,
      ), // TextStyle
    ), // TextTheme
  ), // ThemeData
```

Theme

```
# the latest version available on pub.dev. To see which dependencies have newer
# versions available, run 'flutter pub outdated'.
dependencies:
  flutter:
    sdk: flutter
  flutter_slidable: ^3.0.0
  flutter_localizations:
    sdk: flutter
  intl: any
  provider: ^6.0.5
  image_picker: ^1.0.8

  # The following adds the Cupertino Icons font to your application.
  # Use with the CupertinoIcons class for iOS style icons.
  cupertino_icons: ^1.0.2
  firebase_core: ^2.19.0
  cloud_firestore: ^4.11.0
  firebase_auth: ^4.12.0

  dev_dependencies:
    flutter_test:
      sdk: flutter
```

Loading and Organizing Dataset

The screenshot shows a Jupyter Notebook interface with the title "Breast_Cancer_final" and a status bar indicating "Draft saved". The menu bar includes File, Edit, View, Run, Add-ons, Help, and a "Share" button. The code cell contains imports for numpy, pandas, PIL, matplotlib, tensorflow, and various keras modules. It defines a path to the dataset directory, lists image files, and iterates over directories to append image paths and class names to lists.

```
[1]:  
import numpy as np  
import pandas as pd  
from PIL import Image  
import matplotlib.pyplot as plt  
import tensorflow as tf  
import tensorflow.keras as keras  
from sklearn.model_selection import train_test_split  
from sklearn.preprocessing import LabelEncoder  
from tensorflow.keras.preprocessing.image import ImageDataGenerator  
from tensorflow.keras.layers import Conv2D, MaxPooling2D, Flatten, Dense, Dropout  
from tensorflow.keras.callbacks import EarlyStopping  
from tensorflow.keras.optimizers import Adam  
import os  
  
[4]:  
# Define the path to the dataset directory  
dataset_path = "/kaggle/input/breast-ultrasound-images-dataset/Dataset_BUSI_with_GT"  
  
# Get the list of image files  
image_files = []  
labels = []  
  
# Iterate over the directories  
for class_name in ['benign', 'malignant', 'normal']:  
    class_path = os.path.join(dataset_path, class_name)  
    for filename in os.listdir(class_path):  
        image_path = os.path.join(class_path, filename)  
        image_files.append(image_path)  
        labels.append(class_name)
```

Preprocessing and Splitting Data

The screenshot shows a Jupyter Notebook interface with the code cell containing steps to convert labels to numerical values, one-hot encode them, and split the data into training, validation, and test sets. It also defines a function to load and preprocess images.

```
[5]:  
# Convert labels to numerical values  
from tensorflow.keras.utils import to_categorical  
label_encoder = LabelEncoder()  
labels = label_encoder.fit_transform(labels)  
  
# Convert labels to one-hot encoded format  
labels = to_categorical(labels)  
  
# Split the data into train, validation, and test sets with 70/20/10  
X_train_full, X_test, y_train_full, y_test = train_test_split(image_files, labels, test_size=0.2, random_state=42, stratify=labels)  
X_train, X_val, y_train, y_val = train_test_split(X_train_full, y_train_full, test_size=0.125, random_state=42, stratify=y_train_full)  
# Note: test_size=0.125 for validation is used to ensure the final split of 70/20/10  
  
[6]:  
# Define a function to load and preprocess the images  
def load_preprocess_image(image_path, target_size=(150, 150)):  
    """Loads and preprocesses an image."""  
    image = Image.open(image_path)  
    image = image.resize(target_size)  
    image = image.convert('RGB') # Convert to RGB  
    image = np.array(image)  
    image = image / 255.8  
    return image
```

Loading and Preprocessing Images for Training, Validation, and Testing

```
[?]:  
# Load and preprocess the training images and labels  
X_train = [load_preprocess_image(image_path) for image_path in X_train]  
X_train = np.array(X_train)  
y_train = np.array(y_train)  
  
# Load and preprocess the validation images and labels  
X_val = [load_preprocess_image(image_path) for image_path in X_val]  
X_val = np.array(X_val)  
y_val = np.array(y_val)  
  
# Load and preprocess the testing images and labels  
X_test = [load_preprocess_image(image_path) for image_path in X_test]  
X_test = np.array(X_test)  
y_test = np.array(y_test)  
  
# Print the shapes of the resulting datasets  
print("Train data shape:", X_train.shape, y_train.shape)  
print("Validation data shape:", X_val.shape, y_val.shape)  
print("Test data shape:", X_test.shape, y_test.shape)  
  
Train data shape: (1104, 150, 150, 3) (1104, 3)  
Validation data shape: (158, 150, 150, 3) (158, 3)  
Test data shape: (316, 150, 150, 3) (316, 3)
```

+ Code

+ Markdown

Building and Compiling the Convolutional Neural Network (CNN)

```
[ ]:  
# Initialize the model  
model = Sequential()  
  
# Add convolutional layers  
model.add(Conv2D(32, (3, 3), activation='relu', input_shape=(150, 150, 3)))  
model.add(MaxPooling2D(2, 2))  
model.add(Conv2D(64, (3, 3), activation='relu'))  
model.add(MaxPooling2D(2, 2))  
model.add(Conv2D(128, (3, 3), activation='relu'))  
model.add(MaxPooling2D(2, 2))  
model.add(Conv2D(256, (3, 3), activation='relu'))  
model.add(MaxPooling2D(2, 2))  
  
# Flatten the output  
model.add(Flatten())  
  
# Add dense layers  
model.add(Dense(512, activation='relu'))  
model.add(Dropout(0.5))  
model.add(Dense(256, activation='relu'))  
model.add(Dropout(0.5))  
model.add(Dense(3, activation='softmax')) # Assuming 3 classes: benign, malignant, normal  
  
# Compile the model  
model.compile(optimizer='adam', loss='categorical_crossentropy', metrics=['accuracy'])
```

+ Code

+ Markdown

Training the Convolutional Neural Network

```
[9]: # Train the model
model.fit(X_train, y_train, batch_size=32, epochs=20, validation_data=(X_val, y_val))

Epoch 1/20
35/35 35s 923ms/step - accuracy: 0.5118 - loss: 0.9617 - val_accuracy: 0.5759 - val_loss: 0.8082
Epoch 2/20
35/35 41s 923ms/step - accuracy: 0.5924 - loss: 0.8293 - val_accuracy: 0.7089 - val_loss: 0.7542
Epoch 3/20
35/35 32s 920ms/step - accuracy: 0.6859 - loss: 0.7795 - val_accuracy: 0.7089 - val_loss: 0.6497
Epoch 4/20
35/35 41s 919ms/step - accuracy: 0.6988 - loss: 0.6709 - val_accuracy: 0.6772 - val_loss: 0.7712
Epoch 5/20
35/35 32s 925ms/step - accuracy: 0.7093 - loss: 0.6256 - val_accuracy: 0.7025 - val_loss: 0.6394
Epoch 6/20
35/35 33s 940ms/step - accuracy: 0.7436 - loss: 0.5912 - val_accuracy: 0.7405 - val_loss: 0.5884
Epoch 7/20
35/35 33s 940ms/step - accuracy: 0.7707 - loss: 0.4932 - val_accuracy: 0.7532 - val_loss: 0.6147
35/35 33s 940ms/step - accuracy: 0.7707 - loss: 0.4932 - val_accuracy: 0.7532 - val_loss: 0.6147
Epoch 8/20
35/35 34s 961ms/step - accuracy: 0.8428 - loss: 0.4141 - val_accuracy: 0.7342 - val_loss: 0.6628
Epoch 9/20
35/35 40s 941ms/step - accuracy: 0.8441 - loss: 0.3919 - val_accuracy: 0.7658 - val_loss: 0.6329
Epoch 10/20
35/35 33s 952ms/step - accuracy: 0.8594 - loss: 0.3407 - val_accuracy: 0.7911 - val_loss: 0.5804
Epoch 11/20
35/35 41s 946ms/step - accuracy: 0.8803 - loss: 0.2913 - val_accuracy: 0.7785 - val_loss: 0.7043
Epoch 12/20
35/35 33s 947ms/step - accuracy: 0.9248 - loss: 0.2104 - val_accuracy: 0.7595 - val_loss: 0.8381
Epoch 13/20
35/35 33s 936ms/step - accuracy: 0.9219 - loss: 0.2061 - val_accuracy: 0.8101 - val_loss: 0.7600
35/35 33s 943ms/step - accuracy: 0.9608 - loss: 0.1139 - val_accuracy: 0.7975 - val_loss: 1.1384
```

Training Progress and Epoch Results

```
[9]: #48 920ms/step - accuracy: 0.7050 - loss: 0.4230 - val_accuracy: 0.7025 - val_loss: 0.5394
Epoch 6/20
35/35 33s 940ms/step - accuracy: 0.7436 - loss: 0.5912 - val_accuracy: 0.7405 - val_loss: 0.5884
Epoch 7/20
35/35 33s 940ms/step - accuracy: 0.7707 - loss: 0.4932 - val_accuracy: 0.7532 - val_loss: 0.6147
35/35 33s 940ms/step - accuracy: 0.7707 - loss: 0.4932 - val_accuracy: 0.7532 - val_loss: 0.6147
Epoch 8/20
35/35 34s 961ms/step - accuracy: 0.8428 - loss: 0.4141 - val_accuracy: 0.7342 - val_loss: 0.6628
35/35 40s 941ms/step - accuracy: 0.8441 - loss: 0.3919 - val_accuracy: 0.7658 - val_loss: 0.6329
Epoch 9/20
35/35 33s 952ms/step - accuracy: 0.8594 - loss: 0.3407 - val_accuracy: 0.7911 - val_loss: 0.5804
35/35 33s 952ms/step - accuracy: 0.8594 - loss: 0.3407 - val_accuracy: 0.7911 - val_loss: 0.5804
Epoch 10/20
35/35 41s 946ms/step - accuracy: 0.8803 - loss: 0.2913 - val_accuracy: 0.7785 - val_loss: 0.7043
Epoch 11/20
35/35 41s 946ms/step - accuracy: 0.8803 - loss: 0.2913 - val_accuracy: 0.7785 - val_loss: 0.7043
Epoch 12/20
35/35 33s 947ms/step - accuracy: 0.9248 - loss: 0.2104 - val_accuracy: 0.7595 - val_loss: 0.8381
Epoch 13/20
35/35 33s 936ms/step - accuracy: 0.9219 - loss: 0.2061 - val_accuracy: 0.8101 - val_loss: 0.7600
35/35 33s 943ms/step - accuracy: 0.9608 - loss: 0.1139 - val_accuracy: 0.7975 - val_loss: 1.1384
35/35 33s 943ms/step - accuracy: 0.9608 - loss: 0.1139 - val_accuracy: 0.7975 - val_loss: 1.1384
[9]: <keras.src.callbacks.history.History at 0x7f8f10701690>
```

Making Predictions and Saving the Model

```
[17]: # name = np.array(name)
# detect = model.predict(name)
name = load_preprocess_image('/kaggle/input/breast-ultrasound-images-dataset/Dataset_BUSt_with_GT/malignant/malignant (101).png')
name = np.expand_dims(name, axis=0) # Add an extra dimension for batch size
detect = model.predict(name)
print(detect)
# Get the predicted class index
predicted_class_index = np.argmax(detect[0])

# Map the predicted class index back to its original label
predicted_class_label = label_encoder.inverse_transform([predicted_class_index])[0]

# Print the predicted class label
print("Predicted Class Label:", predicted_class_label)
```

```
1/1 0s 31ms/step
[2.7182088e-05 9.9997187e-01 8.9869957e-07]
Predicted Class Label: malignant
```

```
# Save the model
model.save('Breast_Cancer_Model.h5')
```

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