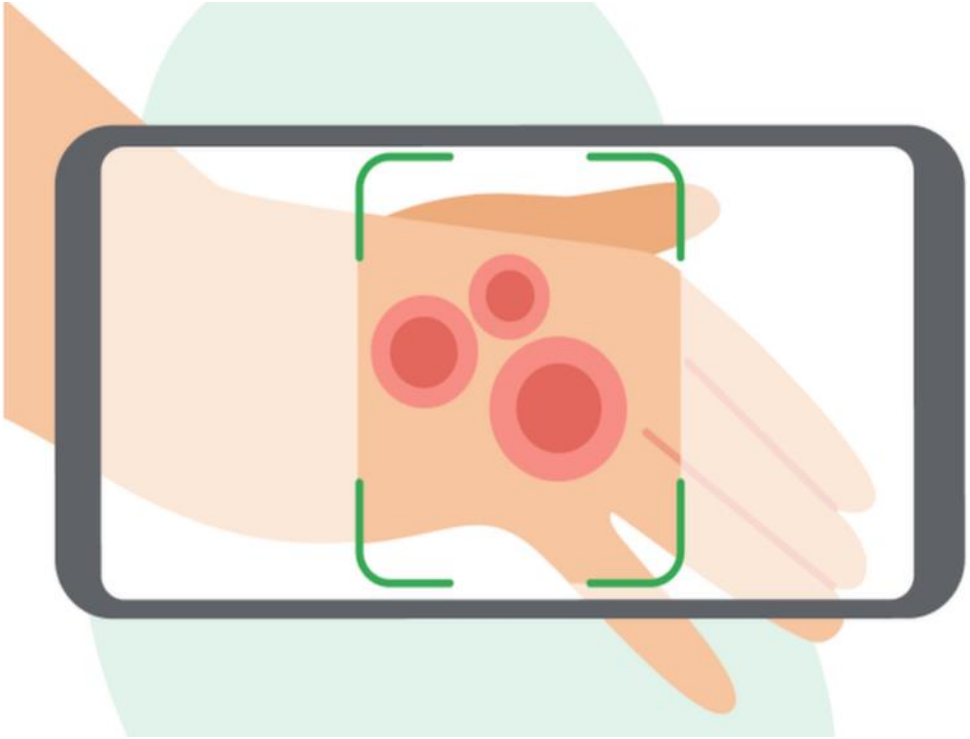
AI-based skin disease monitoring and recognizing systems by image processing models

We provide our best service by easiest way!



Describing Project (Rank), scope, advantage, Complexity, Market analysis:

Projects (Rank)	Scope	Advantage	Complexity	Market analysis
1. AI based Women's Safety & Health Care	1. Heart rate detection using watch 2. fear and danger detection 3. mobile app controlling system 4. Dynamically call on emergency & priority number when women in fear or danger 5.Automatically location detection 6. Give update on health care tips & tricks 7. Doctors' information according to their location 8. Best hospital information according to user location with different categories. 9. AI based suggestions 10. Ambulance information and cost 11. Accident detection 12. To-Do list facility 13. Prescription copy stored facility and alert system 14. Medicine details	1. Ensuring women's safety and health 2. organizational benefits 3. Big profitable projects	1. Very complexed 2. Higher cost project.	1. In the market there is no app like this. 2. Our project is different from other safety apps or health care apps. 3. We are able to sell these different types of organizations for making money.

2. Online E-learning platform for children.	1.E-Learning platform some test like (Spell Correction, rearranging, fill in the blanks, selecting correct word & letter from the given picture, select correct picture from the word, matching picture & word, story learn with question & answer part) with audio & video in learning phase. 2. Switching language from English to Bangla or vice versa. 3. Kids can easily picture, draw and color. 4. Kids play games and watch cartoon.	1. Kids can easily learn from this system. 2. Different types of projects. 3. Organization benefits. 4. Develop the kids' skills and kids will find their interest by gaming & coloring features.	1. Very complexed 2. Higher cost project.	1. Our project is different from other E-learning for children. 2 We are able to sell these different types of organizations for making money.
3. Research Help Desk	1. Finding researchers for research 2. User profile info. 3. Research guideline 4. Paper writing guideline	1. Students find the good direction 2. Difficult problem solution idea from the expert.	1. Low complexity 2. Low-cost project	1. In the market there is no app like this but some good platforms exist.
4. AI based Fitness app	1. Step by step Fitness animation & videos 2. Fitness tips 3. Fitness Diet plan 4. Fitness history/progress 5. Calories burn or gain calculation 6. Alert 7. Smart watch 8. Doctor Advice by Robot chat 9. Gym information	1. User find the good direction 2. Difficult problem solution idea from the expert. 3. Know about gym instruments and exercise.	1. Comparatively easy 2. Low-cost project.	1. In the market there is no app like this. 2. Here we include some extra features.

5. Advance futuristic Rideshare platform	1. Fixed door to door official ride sharing service 2. AI based server control 3. AI control ride withdrawal and next ride control. 4. Arrival and waiting time 5. Integrated server system.	1. Users reach his/her place within time. 2. Users feel safe and tension free service with reasonable price.	1. Comparatively easy 2. Low-cost project.	1. In the market there is no app like this. 2. Our project is different from other rideshare apps or health care apps. 3. We are able to sell these different types of organizations for making money.
6. AI-based skin disease monitoring system project	1. Monitoring the health of skin diseases by using image processing such as skin rash, pimple, acne, blister, hives, Scalp Psoriasis etc. 2. It gives several general treatment suggestions to the user such as medicine, therapy, or doctor suggestions etc. 3. App and web-based project. 4. FAQ	1. Provide people's safety 2. Identify the skin disease by prediction, so that people save money. 3. Big profitable projects 4. Give an optimal treatment suggestions.	1. Comparatively is so much hard 2. High-cost project.	1. In the market there is no app like this. 2. Our project is very unique and applicable to people. 3. We are able to sell these different types of organizations for making money.

Selected project:

"AI-based skin disease monitoring and recognizing systems by image processing models"

1. Planning
i. Initiating and Planning IS project

1.1: Describe project scope, alternatives, feasibility:

Project scope:

1. Monitoring the health of skin diseases by using image processing such as skin rash, pimple, acne, blister, hives, Scalp Psoriasis, etc.
2. It gives several general treatment **suggestions** to the user such as medicine, therapy, or doctor suggestions, etc.
    A. User details: e. g, *name, phone, *age, gender,
    B. Symptoms of the disease
    C. Symptoms duration
    D. Previous experience of the disease
    E. Side effect of other health problems of humans.
    F. Suggest the tests according to the disease which is predicted by image processing.
    G.
3. App and web-based project.
4. FAQ

Alternatives:

1. In the market there is no app like this.
2. Our project is different from other safety apps or health care apps.
3. We can sell these different types of organizations for making money.

Feasibility:

1. It's easy to use using a phone/ web page.
2. Easily identify skin disease anywhere you have.
3. Primary treatment idea.
4. It's used for survey purposes of skin disease.
5. It can be used for learning purposes e. g, further study.

1.2: Divide project into tasks:

1. Image segmentation: various disease spots finding using k-means algorithm
2. Feature extraction
3. Construction of development environment
4. Database design:

Data table name	Function description
Typical Images	Storing information on typical images of diseases, including the categories of diseases, image names, descriptions and image storage paths
Knowledge	Store basic information about diseases, including disease category, name of diseases, keywords for identification (location and time of disease)
Rules	Store reasoning rules information, including reasoning disease category, parent node, left child rule, right sub rule, rule type, rule description, regular image storage path
Contents	Detailed information about plant diseases, such as summary, typical symptoms, control methods, etc.
Class information	The category of information stored, such as disease, etc.

5. System architecture
6. Experiments and analysis
7. Conclusion
8. Identify all stakeholders
9. Define roles and responsibilities
10. Developed a Web page/app development

1.3. Estimate resource requirements and create a resource plan.

Estimate resource requirements	Resource plan
Images of skin disease	Collect images from the web resource
Information/data of skin disease	Collect data from the web resource

Android apps	Create an android app
Web site	Create an android app

1.4: Develop a communication plan.

a. Every week Tuesday from 10 am - 12 am.
b. Zoom or physical platform

1.5: Determine standards and procedures.

a. Standards and Procedures for **Team Performance**, including such general project practices as the code of conduct and standard project terminology, meetings, change control procedures (including the use of Change Requests and Decision Requests), and risk management.
b. Standards and Procedures for **Cost/Schedule Management**, including organizing the work, project monitoring, project accounting, and cost/schedule analysis.
c. Standards and Procedures for **Data Management**, including the project library, document identification, document structure and style, and document preparation.
d. Standards and Procedures for **Configuration Management**, including identifying, controlling, maintaining, and reporting on configuration items.
e. Standards and Procedures for **Quality Management**, including such things as: walk-throughs, reviews, audits and inspections, handling and storing, packaging and shipping, and procedures for eliminating the cause of problems.

1.7: Identify and assess risk:

■ **Project size**
Team size: In this project, we required at least four members.
Project duration: at least 2 months
Programming effort: App developer, Web developer, and Project analyzer.
■ **Project structure**
New vs. renovated system: This project is a totally new system.
Management commitment:
User perceptions:

■ Development group
Familiarity with platform:
Software: Java, JavaScript, Android studio, etc.
Development of similar systems: till now there is no app.

■ User group:
Familiarity with IS development process:
Application area: End-to-end users use this app or website.
Use of similar systems:

1.8: Develop a statement of work:

We chose a project namely "**AI-based skin disease monitoring and recognizing systems by image processing models"** because a number of the people who have skin diseases but won't go to doctors directly, try to take some medicine from any pharmacy, and take random medicine where they have no idea about the disease and medicine. They don't know that it is good medicine for that type of disease or not. So, we work to predict the disease and give an optimal treatment solution suggestion so that people get well soon. It helps people to save money, where people waste his/her money by buying unwanted/fake medicine. Our project will give detailed information about skin disease and treatment suggestions.

1.10: Set baseline project plan:

A major outcome of our project people is able to identify their skin problems and get suggestions from our project.

1. Analysis:

i. Requirement Determination

2.1: Prepare an interview guide

a. Interview Outline

b. approximate time: 1.5 hours

c. Questions

d. Answers

Interview Outline	
Interviewee: User	Interviewer: kiron
Office, conference room, or phone number	Appointment Date: 29/12/21 Start Time: 3.00 pm End Time: 4.30 pm
Objectives: What data to collect On what to gain agreement What areas to explore	Reminders: Background/experience of interviewee Known opinions of interviewee

Agenda:
• Introduction
• Background on Project
• Overview of Interview
  ○ Topics to Be Covered
  ○ Permission to Record
Topic 1 Questions
Topic 2 Questions
	Approximate Time:
	1 minute
	2 minutes
	
	1 minute
	
	5 minutes
	7 minutes

Summary of Major Points	2 minutes
Questions from Interviewee	5 minutes
Closing	1 minute
Interviewee: kiron	Date: 20 November 2021
Questions:	Notes:
(Open-ended) Question: 1. What do you want from this project?	Observations: Answer:

2. What is the main feature of your project? **3.** How do I diagnose the disease? **4.** A symptom might appear in several diseases. What is the best way to deal with this situation? **5.** How would you give the suggestions for identified diseases? **6.** How many possible solutions do you have? **7.** What will be the primary treatment? **8.** What is the budget of your project? **9.** What is the delivery time of your project? **10.** How can we help you find what you are looking for in your system? **11.** What are your system goals? **12.** How important is security around your AI-based skin disease monitoring by facial expression and image processing models project?	1. In this project, I will identify skin disease by monitoring disease images and identifying the illness weight of the patient by facial expression. It also analyzes the test result for giving appropriate suggestions of treatment. It reduced the time and cost also. 2. Find the skin disease and give the expert suggestion of treatment to the user. Such as - • Disease diagnostics: 3. Diagnose the situation by facial expressions and monitoring images/symptoms of the disease. 4. Give some tests for analyzing the disease. 5. Test result analyzing 6. 2 possible solution 7. Simple suggest 8. 100K 9. within 3 month 10. Firstly I want a navigation bar on top of my page or app and the middle of the point has some pictures of our organization's activities and then I have shown my facilities and then our organization’s introductions and then end. 11. My system goal is benefits of user & organization. 12. It is very much important is security around my AI-based skin disease monitoring by facial expression and image processing models project

2.2: Analysis and review of the interview.
Ans:

Requirements	Analysis and Review
1. Diagnostics information analysis	First of insert user information (name, age, gender, phone number).Then user Symptoms duration and previous experience of the disease.
2. Tests suggestions	Test suggestions (blood test, skin biopsy, skin culture lab test as output).
3. Tests analyzing	Test report as a input and advice primary treatment
4. Medicine suggestions	Test report as a input and Identification medicine for solving disease

2. Analysis:

ii. Requirement Analysis

2.1: Requirement Analysis

Functional Requirement:	**Non-Functional Requirement:**
1. Diagnostics information analysis 2. Tests suggestions 3. Tests analyzing 4. Medicine suggestions 5. FAQ	1. User Registration 2. Security 3. Reliability 4. Fast

1.2 Diagnostics information analysis:

DATA:

- *name, *age, gender, phone no.
- Symptoms
- Duration
- Previous experience of the disease
- Image
- Symptoms from dataset
- **Output**: list of symptoms

Source: text input, images of user

Data Flow:

Primary treatment suggestions:

Data:

- Get the order right.
- Exfoliate once per week.
- Always wear an SPF.

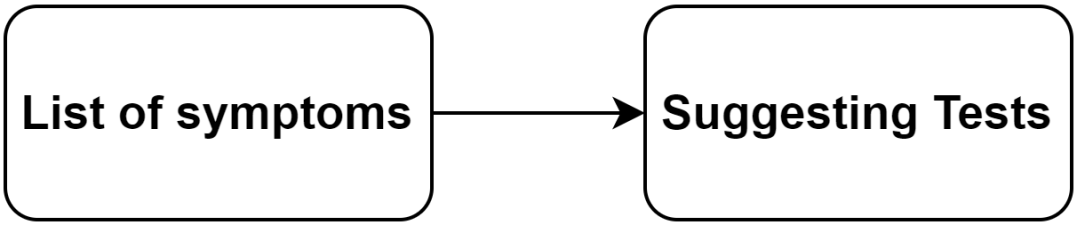
- Drink water, and lots of it.
- Don’t forget your neck and décolletage.
- Double cleanse.
- Use toner.
- Boost your vitamin C.
- Try retinol.
- Hone your moisturizing technique.
- Avoid hot water.
- Eat your skincare (but not the products!).
- Give your face a massage.

Source: https://www.healthline.com/health/skin-disorders#pictures

2.3: Test suggestions

- Identified disease as input
- blood test, Skin biopsy, skin culture lab test as output

Data Flow:



2.4: Tests result analyzing the disease.

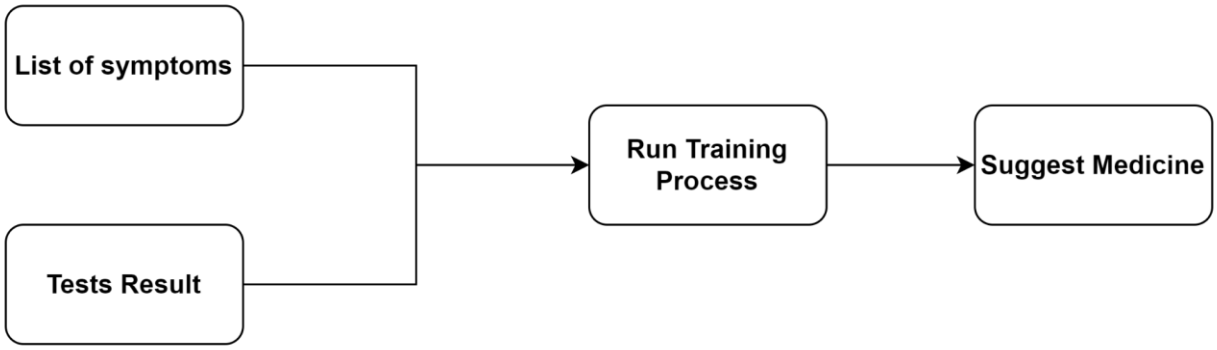
Data:

1. List of symptoms as input
2. Test Report as input
3. Primary treatment take as input
4. Identified medicine for solving disease

Source:

https://link.springer.com/article/10.1007/s12010-019-03222-8/tables/2?fbclid=IwAR07qmvbs2Nn-EAaFDfwQ826brGP2BgY59C7KhIdrsJ6rAtKdIp7iTlch-M

Data Flow:



2.5: Possible solution suggestions & Medicine

Solution suggestions:

- Avoid sharing utensils, personal items or cosmetics.
- Disinfect objects you use in public spaces, such as gym equipment.
- Drink plenty of water and eat a nutritious diet.
- Sleep seven to eight hours per night.
- Use sun protection to prevent sunburn and other sun damage.
- Wash your hands regularly with soap and water.

Source:https://my.clevelandclinic.org/health/diseases/21573-skin-diseases#management-and-treatment

Medicine suggestions:

- Tremotyx
- Butenafine
- Cefdinir
- Biafine
- Desonide.

3. Database Design

3.1: After 3NF Normalization

Table-1

User **id**	**Name**	**Age**	**Phone No.**
1	Arifa	31	111111111
3	Ashik	20	111111111
4	Abdullah	25	111111111
5	Swapnil	20	111111111
6	Neelima	20	111111111
7	Shona	23	111111111
8	Parvej	26	111111111
9	Mithu	30	111111111
10	Anower	30	111111111
11	Rasel	24	111111111
13	Tanha	28	111111111
14	Sopna	28	111111111

Table-2

image_id	**List of Symptoms**	**Duration**	**Previous Experience**	**Image**	**analysis_id**	**Date-time**	**Image_analysis_suggestions**	**Primary_Treatment**	**Test Suggestions**
1	Breakouts on the skin composed of blackheads, whiteheads, pimples, or deep, painful cysts and nodules	2	N\A	image/path	1	01/05/2013	raised bumps	Avoid sharing utensils, personal items or cosmetics.	blood test, Skin biopsy, skin culture lab test

2	peeling skin	9	N\A	image/path	2	02/05/2019	peeling skin	Disinfect objects you use in public spaces, such as gym equipment.	blood test, Skin biopsy, skin culture lab test
3	Eczema	2	N\A	image/path	3	06/09/2020	Eczema	Sleep seven to eight hours per night.	blood test, Skin biopsy, skin culture lab test
4	Cellulitis	5	N\A	image/path	4	06/05/2021	Cellulitis	Use sun protection to prevent sunburn and other sun damage.	blood test, Skin biopsy, skin culture lab test
5	Measles	5	N\A	image/path	5	09/12/2015	Measles	Wash your hands regularly with soap and water.	blood test, Skin biopsy, skin culture lab test
6	Red, painful, fluid-filled blister that appears near the mouth and lips	4	N\A	image/path	6	02/02/2019	Cold sore	Wash your hands regularly with soap and water.	blood test, Skin biopsy, skin culture lab test
7	Characterized by watery, clear, fluid-filled area on the skin	2	N\A	image/path	7	07/05/2019	Blister	Avoid sharing utensils, personal items or cosmetics.	blood test, Skin biopsy, skin culture lab test
8	Itchy, raised welts that occur after exposure to an allergen	11	N\A	image/path	8	12/11/2020	Hives	Disinfect objects you use in public spaces, such as gym equipment.	blood test, Skin biopsy, skin culture lab test
9	facial flushing, raised, red bumps, facial redness, skin dryness, and skin sensitivity	3	N\A	image/path	9	18/01/2019	Rosacea	Drink plenty of water and eat a nutritious diet.	blood test, Skin biopsy, skin culture lab test
10	Eczema	5	N\A	image/path	3	29/08/2019	Eczema	Sleep seven to eight hours per night.	blood test, Skin biopsy, skin culture lab test
11	Cellulitis	1	N\A	image/path	4	28/11/2020	Cellulitis	Use sun protection to prevent sunburn and other sun damage.	blood test, Skin biopsy, skin culture lab test
12	Measles	8	N\A	image/path	5	05/05/2019	Measles	Wash your hands regularly with soap and water.	blood test, Skin biopsy, skin culture lab test

13	Lupus	6	N\A	image/path	10	04/09/2021	Lupus	Avoid sharing utensils, personal items or cosmetics.	blood test, Skin biopsy, skin culture lab test
14	Vitiligo	2	N\A	image/path	11	16/12/2021	Vitiligo	Disinfect objects you use in public spaces, such as gym equipment.	blood test, Skin biopsy, skin culture lab test

result-id	**Test result**	**Final Medicine suggestions**	**Flag**
1	raised bumps	Tremotyx	0
2	peeling skin	Butenafine	0
3	ulcers	Cefdinir	1
4	dry, cracked skin	Biafine	0
5	Acne	Desonide	1
6	Cold sore	Tremotyx	0
7	Blister	Butenafine	0
8	Hives	Cefdinir	1

Table-3

9	Rosacea	Biafine	1
10	ulcers	Cefdinir	1
11	dry, cracked skin	Biafine	0
12	Acne	Desonide	0
13	Lupus	Cefdinir	1
14	Vitiligo	Biafine	0

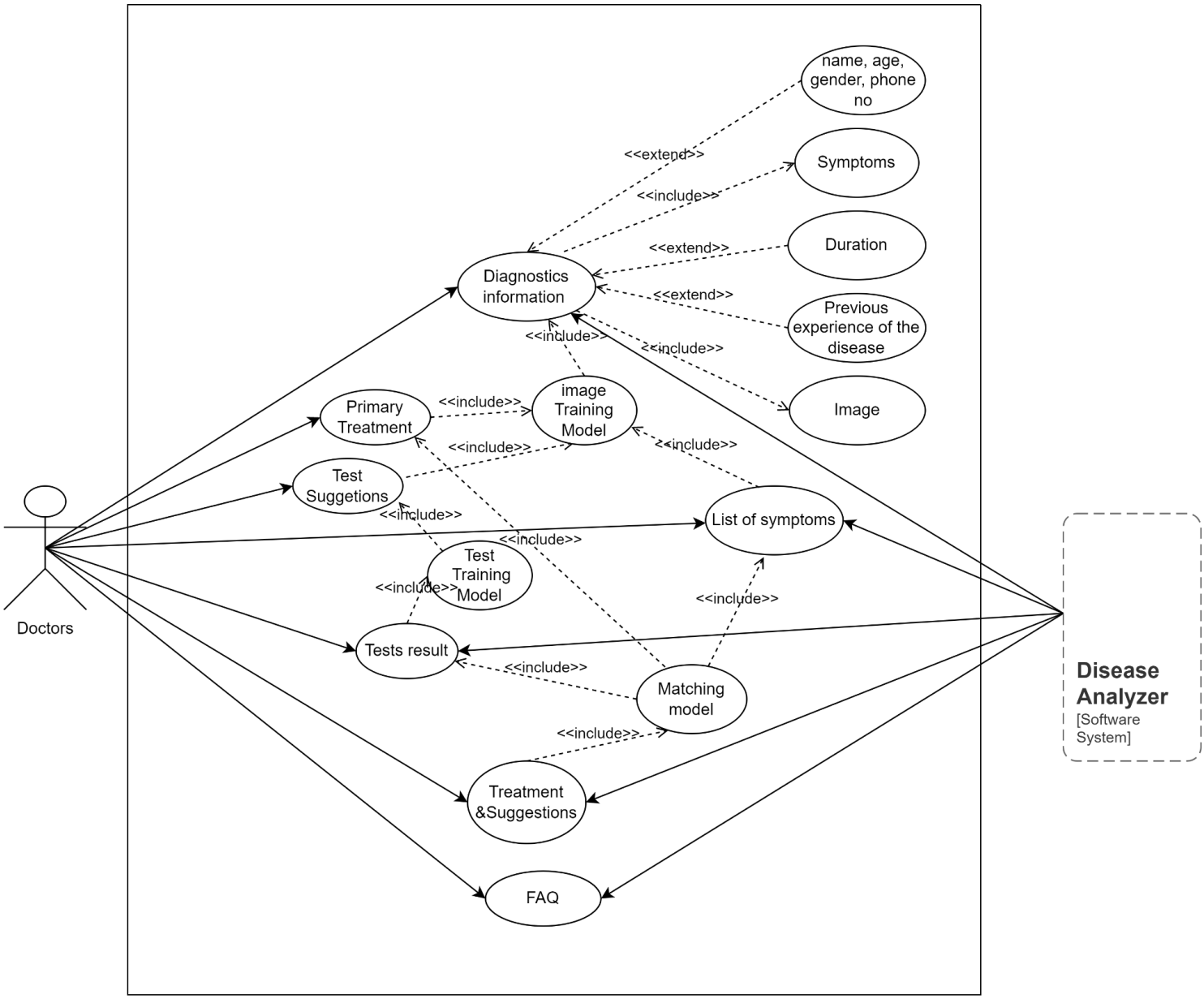
Relation-1

user_id	image_id
1	1
1	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
5	12
13	13
14	14

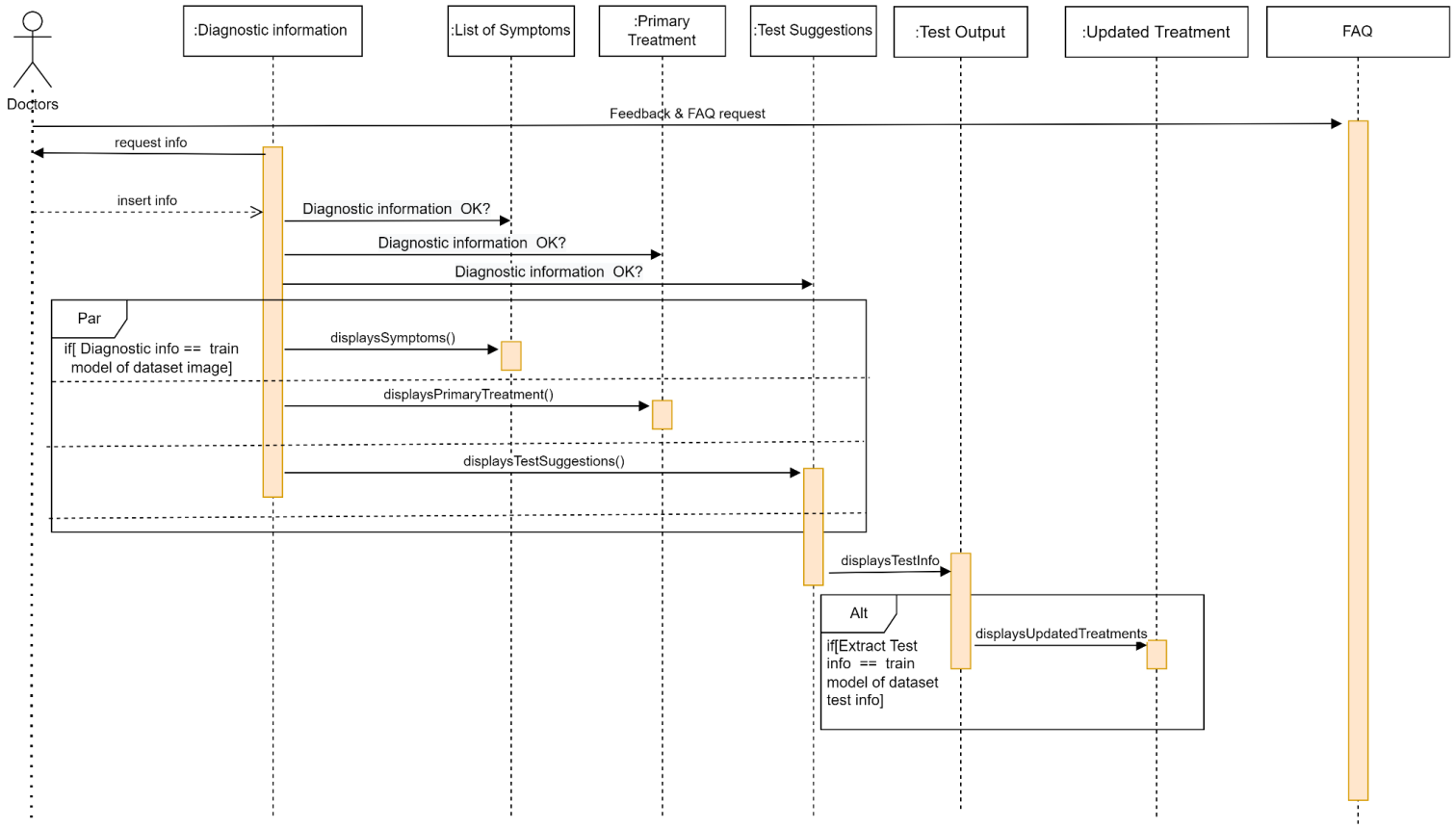
Relation-2

result-id	analysis_id
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	3
11	4
12	5
13	10
14	11

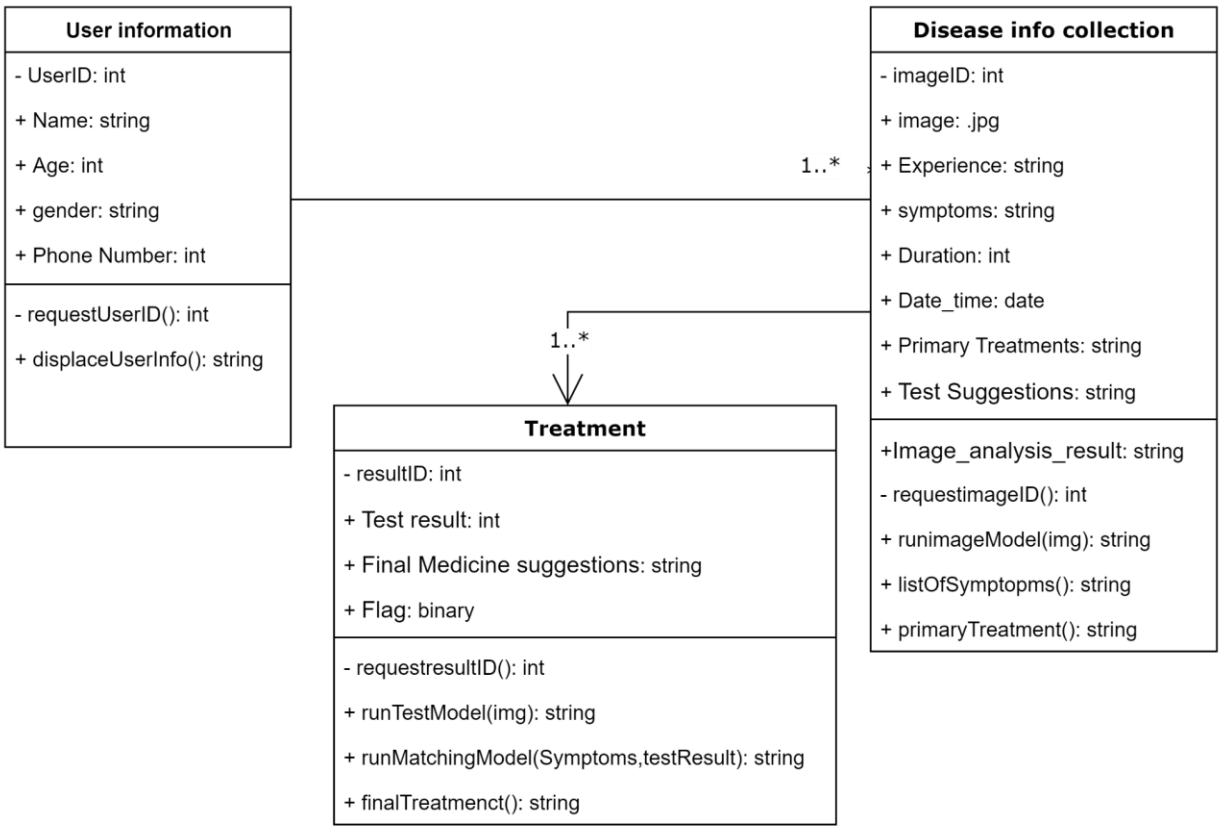
3.2: Use Case Diagram



3.3: Sequence Diagram



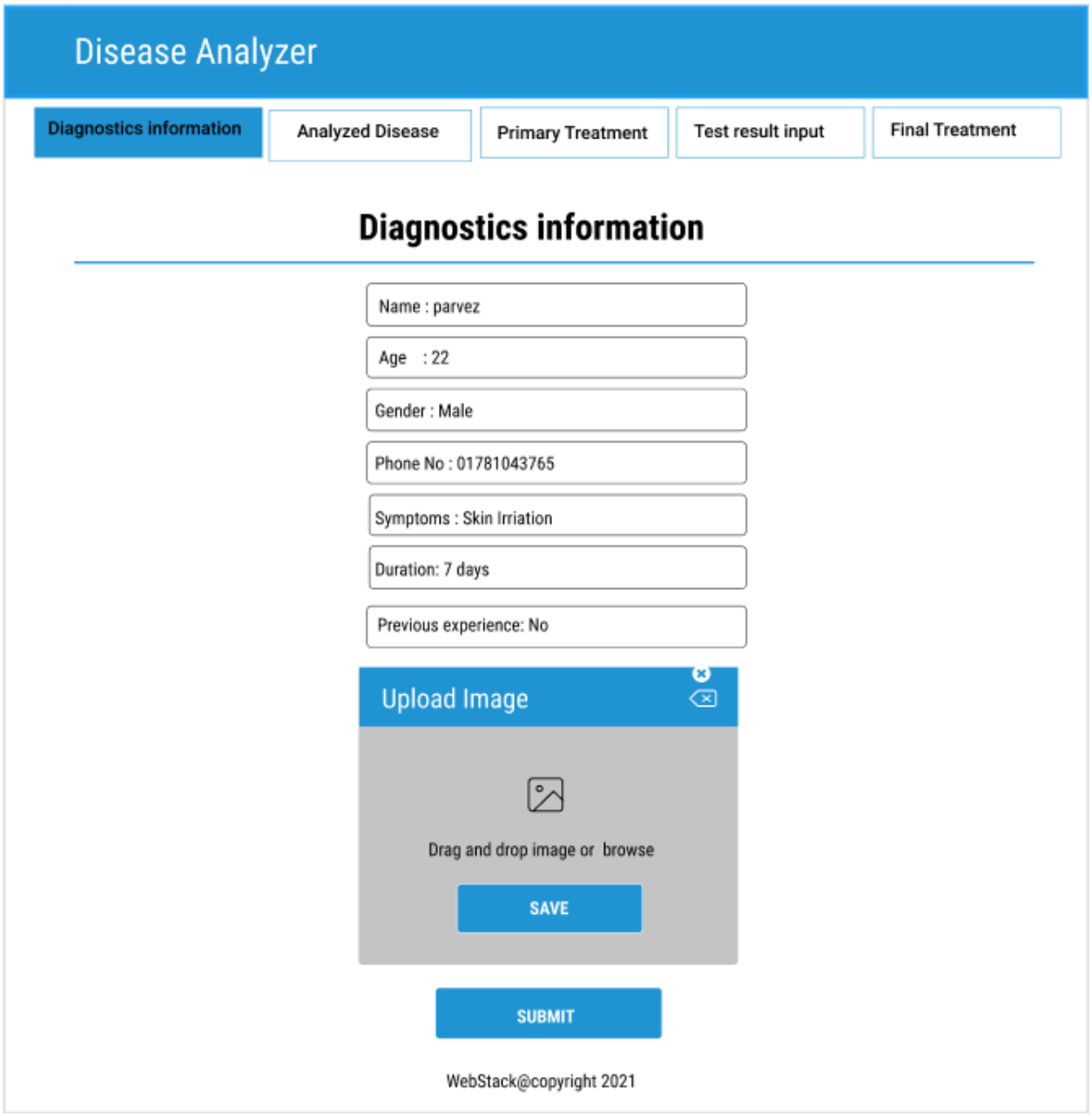
3.4: Class Diagram



4. Implementation: Prototype

Link: Figma prototype live link → Click Here!

Desktop – 01:


Disease Analyzer
Diagnostics information
Analyzed Disease
Primary Treatment
Test result input
Final Treatment
Diagnostics information
Name : parvez
Age : 22
Gender : Male
Phone No : 01781043765
Symptoms : Skin Irriation
Duration: 7 days
Previous experience: No
Upload Image
Drag and drop image or browse
SAVE
SUBMIT
WebStack@copyright 2021

Desktop – 02:

Disease Analyzer

Diagnostics information | Analyzed Disease | Primary Treatment | Test result input | Final Treatment

Analyzed Disease

Analyzed Disease Name : Eczema

Date: 29 December, 2021

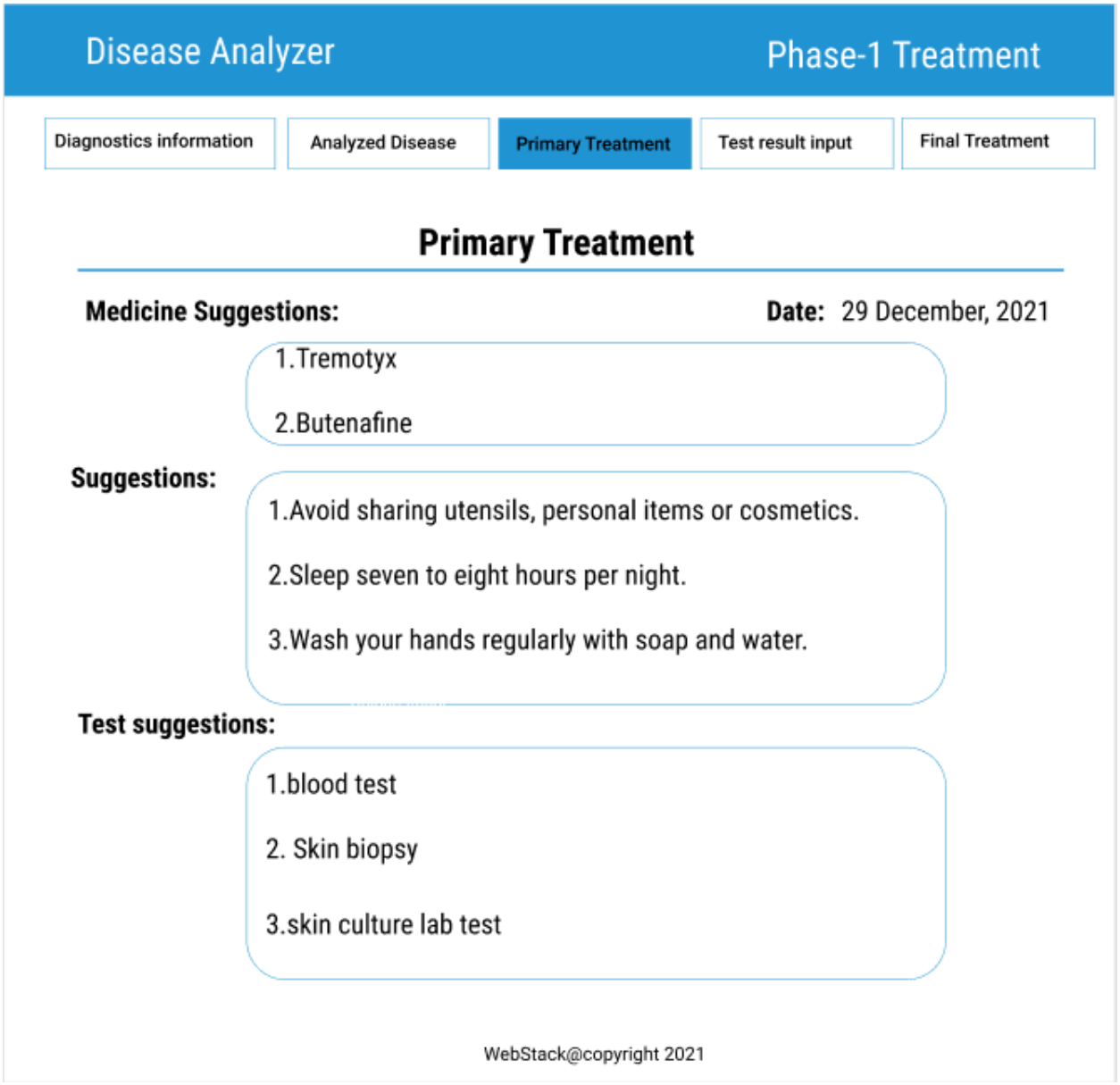
List of Symptoms :

1.Skin irrations
2.Visible blood vessels
3.Raised welts

Analyzing disease Image :

WebStack@copyright 2021

Desktop – 03:


Disease Analyzer
Phase-1 Treatment
Diagnostics information
Analyzed Disease
Primary Treatment
Test result input
Final Treatment
Primary Treatment
Medicine Suggestions:
Date: 29 December, 2021
1.Tremotyx
2.Butenafine
Suggestions:
1.Avoid sharing utensils, personal items or cosmetics.
2.Sleep seven to eight hours per night.
3.Wash your hands regularly with soap and water.
Test suggestions:
1.blood test
2. Skin biopsy
3.skin culture lab test
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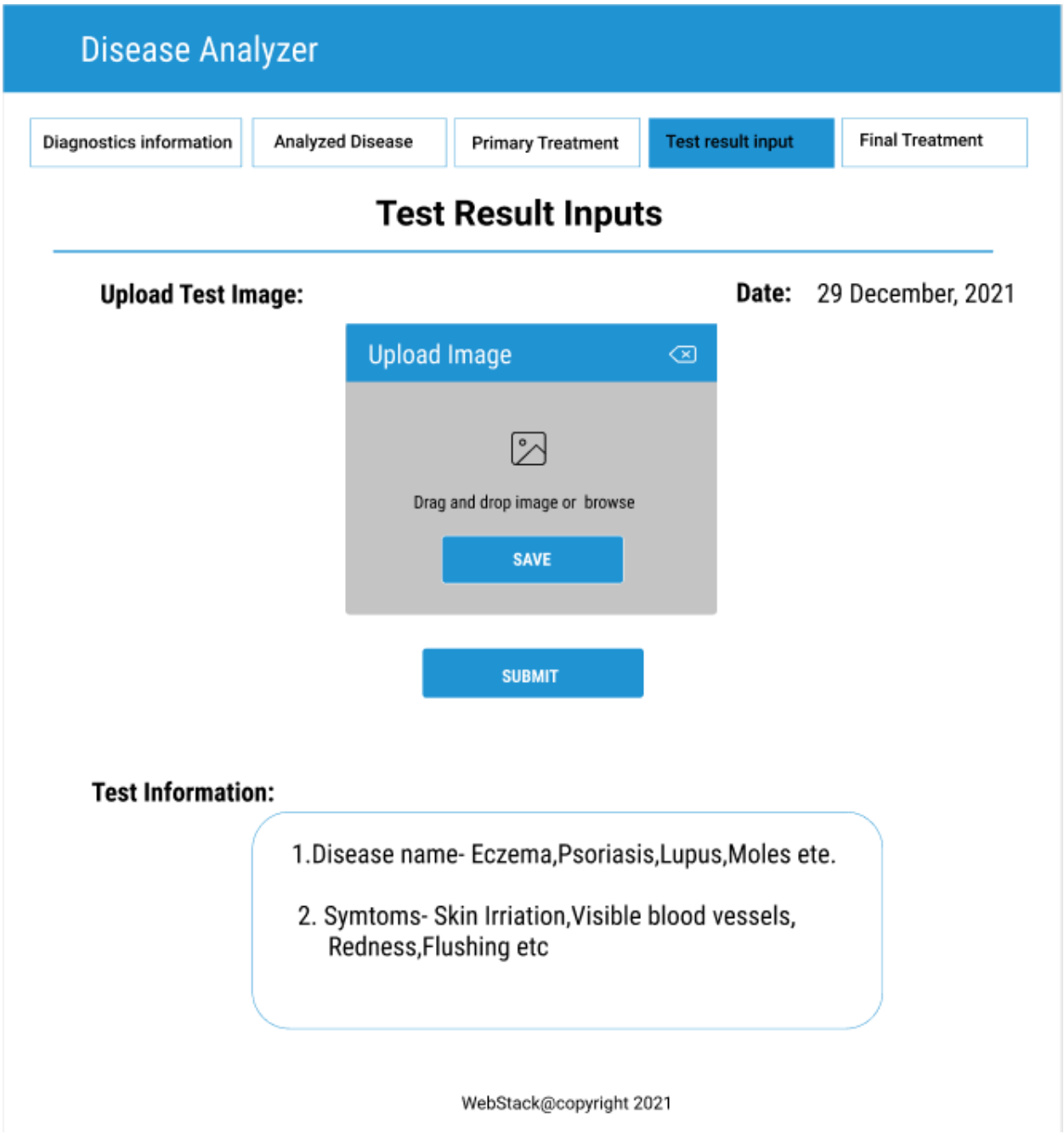
Desktop – 04:


Disease Analyzer
Diagnostics information
Analyzed Disease
Primary Treatment
Test result input
Final Treatment
Test Result Inputs
Upload Test Image:
Date: 29 December, 2021
Upload Image
Drag and drop image or browse
SAVE
SUBMIT
Test Information:
1.Disease name- Eczema,Psoriasis,Lupus,Moles ete.
2. Symtoms- Skin Irriation,Visible blood vessels, Redness,Flushing etc
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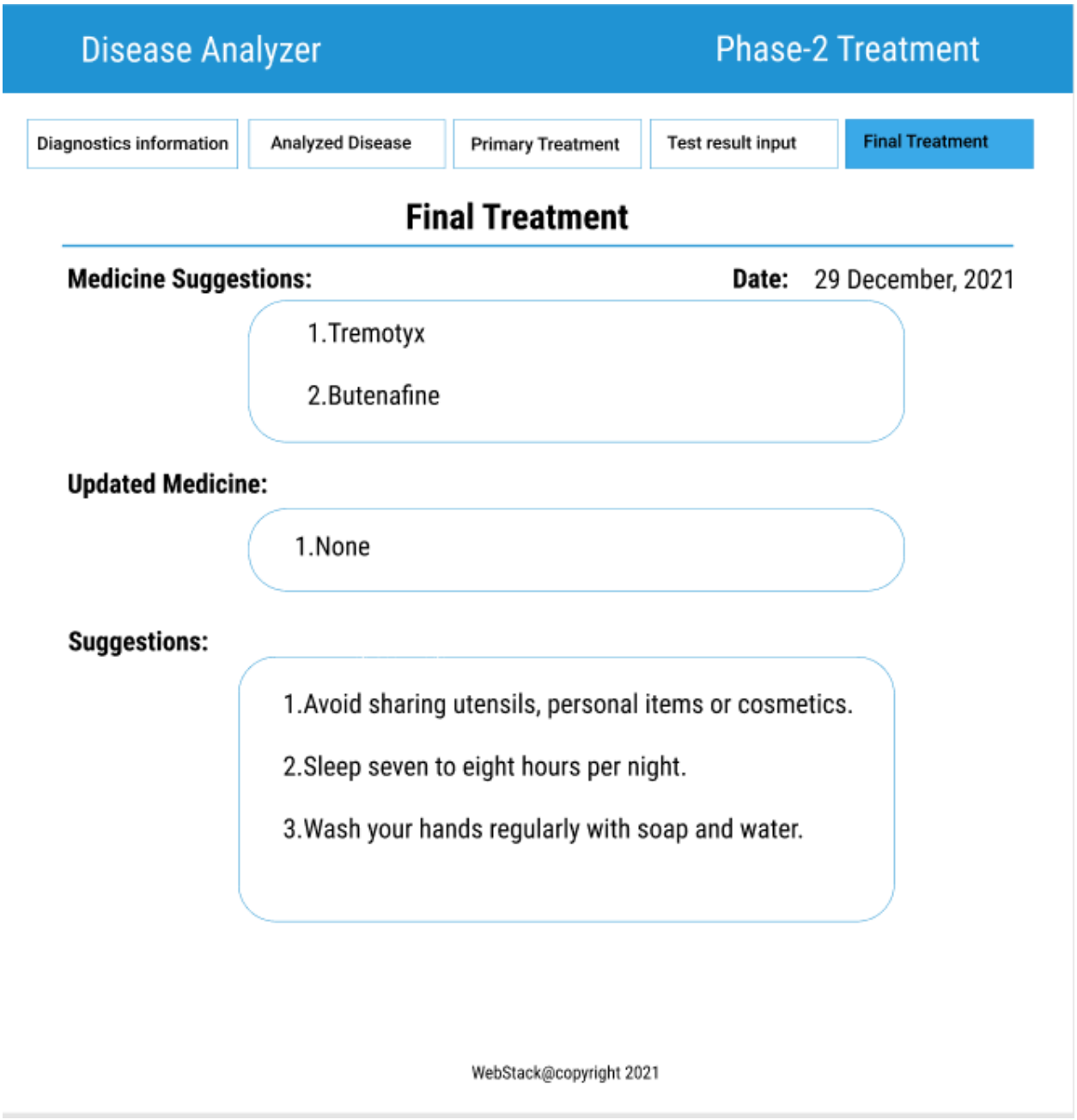
Desktop – 05:


Disease Analyzer
Phase-2 Treatment
Diagnostics information
Analyzed Disease
Primary Treatment
Test result input
Final Treatment
Final Treatment
Medicine Suggestions:
Date: 29 December, 2021
1.Tremotyx
2.Butenafine
Updated Medicine:
1.None
Suggestions:
1.Avoid sharing utensils, personal items or cosmetics.
2.Sleep seven to eight hours per night.
3.Wash your hands regularly with soap and water.
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5. Maintenance:

5.1: Maintenance: Software maintenance is the general process of changing a system after it has been delivered. The term is usually applied to custom software in which separate development groups are involved before and after delivery. The changes made to the software may be simple changes to correct coding errors, more extensive changes to correct design errors, or significant enhancements to correct specification errors or accommodate new requirements. Changes are implemented by modifying existing system components and, where necessary, by adding new components to the system.

5.2: Four major activities occur within maintenance:

1. Obtaining maintenance requests 2. Transforming requests into changes 3. Designing changes 4. Implementing changes

Numerous factors influence the maintainability of a system. These factors, or cost elements, determine the extent to which a system has high or low maintainability. Of these factors, three are most significant: the number of latent defects, the number of customers, and documentation quality. The others—personnel, tools, and software structure—have noticeable, but less, influence.

- Latent defects. This is the number of unknown errors existing in the system after it is installed. Because corrective maintenance accounts for most maintenance activity, the number of latent defects in a system influences most of the costs associated with maintaining a system.
- Number of customers for a given system. In general, the greater the number of customers, the greater the maintenance costs. For example, if a system has only one customer, problem and change requests will come from only one source. Also, training, error reporting, and support will be simpler. Maintenance requests are less likely to be contradictory or incompatible.
- Quality of system documentation. Without quality documentation, maintenance efforts can increase exponentially. In other words, quality documentation makes it easier to find code that needs to be changed and to understand how the code needs to be changed. Good documentation also explains why a system does what it does and why alternatives were not feasible, which saves wasted maintenance efforts.
- Maintenance personnel. In some organizations, the best programmers are assigned to maintenance. Highly skilled programmers are needed because the maintenance programmer is typically not the original programmer and must quickly understand and carefully change the software.
- Tools. Tools that can automatically produce system documentation where none exists can also lower maintenance costs. Also, tools that can automatically generate new code based on system specification changes can dramatically reduce maintenance time and costs.
- Well-structured programs. Well-designed programs are easier to understand and fix.

5.3: It is usually more expensive to add functionality after a system is in operation than it is to implement the same functionality during development. The reasons for this are:

1. Team stability after a system has been delivered, it is normal for the development team to be broken up and for people to work on new projects. The new team or the individuals responsible for system maintenance do not understand the system or the background to system design decisions. They need to spend time understanding the existing system before implementing changes to it.

2. Poor development practice the contract to maintain a system is usually separate from the system development contract. The maintenance contract may be given to a different company rather than the original system developer. This factor, along with the lack of team stability, means that there is no incentive for a development team to write maintainable software. If a development team can cut corners to save effort during development it is worthwhile for them to do so, even if this means that the software is more difficult to change in the future.

3. Staff skills Maintenance staff are often relatively inexperienced and unfamiliar with the application domain. Maintenance has a poor image among software engineers. It is seen as a less-skilled process than system development and is often allocated to the most junior staff. Furthermore, old systems may be written in obsolete programming languages. The maintenance staff may not have much experience of development in these languages and must learn these languages to maintain the system.

We've all probably done it at some point: snapping a photo of a rash or a mole and sending it to a friend or colleague for advice on the "next steps". But often the "next steps" may include confusion, uncertainty, or just plain fear.

So imagine if a system could guide you to a range of possible diagnoses, and provide you with a more realistic set of possibilities (as opposed to just guessing) on what the skin lesion may actually be.

Our system that has keenly aware of the need for teledermatology to enhance our lives. Every year over ten billion searches annually are made related to skin disease conditions that the natural progression was to take advantage of the high-resolution camera in your smartphone and harness the power of our system conduct a search of skin conditions.

Here's how it works: After you launch the website, you use your phone's camera to capture 1 image of the skin condition of vantage points. The website then asks you some questions about your skin type, the duration of the condition, and any other symptoms that may help to more accurately identify the condition. The app further analyzes this information and searches its database of 150 skin conditions to create a list of possible matching conditions.

THE END