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Section I: Team Overview

a. Name of Project: Virus Validator
b. Semester: Summer 2023
c. Group Number: 5
d. Team Members: Sehaj Gandhi, India Jackson, Justin Osinowo, Ivan Valdez
e. Date: June 16, 2023

Section II. Resumes

Sehajpreet S. Gandhi

Computer Science Student – *Senior Year*

Aspiring Software Engineer, seeking to follow my passion and live the dream, while gaining experience in the industry of technology. Using my knowledge acquired from my coursework and from life in general, I intend to work hard at your company and learn a lot from this experience.

singh.sehaj473@gmail.com | 470-420-9911 | Atlanta, Georgia

Experience

Programming Experience- Personal

JUNE 2020 – PRESENT

- Coded Data Structures and Algorithms programs in Java and Python for 2 years.
- Coded System-Level Programming in C.
- Coded Machine Learning, Data Mining, Big Data Programming programs in python, MATLAB, etc.
- Coded multiple professional appearing websites of my own for Clayton State University's projects using HTML, CSS, JavaScript.

IT Manager - Eagles Landing Bottle Shoppe

MARCH 2021 - PRESENT

- Oversaw all technology related activities including but not limited to updating websites constantly, social media, support, etc.
- Daily work also includes salesmanship and customer care.

Assistant Programming Teacher- Rattan Institute

JULY 2022- DECEMBER 2022

- Worked with exceptional software developers and assisted them with teaching programming languages i.e. Java, Python, C, HTML, JavaScript, etc.
- Made learning programming languages fun for students by implementing coding projects from personal experience i.e. web programming, simple python in jupyter notebooks, etc.

Degrees

Bachelor's Degree in Computer Science (~December 2023)
Georgia State University

Associate's degree in Computer Science (July 2022)
Georgia State University

High School Diploma (May 2021)
Union Grove High School

Education

Associate's & Bachelor's in Computer Science, *Georgia State University (Honors)*

AUGUST 2021- PRESENT | GRADUATION: DECEMBER 2023 | 3.9/4.0 GPA

- Acquired Associate's degree in CS and now working my way to Bachelors in CS, and so on.
- Involved in various club activities (not limited to): Computer Science Club, Association for Information Technology Professionals, etc.

Non-Degree Program, Clayton State University

AUGUST 2019- MAY 2021 | 3.9/4.0 GPA

- Dual-enrolled during high school and zealously pursued education in fundamentals of Computer Programming and Information Technology in this institute.

High School Diploma, Union Grove High School

GRADUATED MAY 2021 | 4.3/4.0 GPA

- Graduated honors and top 10 in my high school.
- Enrolled in college classes with Clayton State University while in high school.

Programing & Skills

- Python, C, Java
- HTML, CSS, JavaScript
- Data Mining, Machine Learning, Algorithms
- English, Hindi, Punjabi (Language Proficiency)

Interests

My athletic hobbies include working out, playing basketball and other street sports. My other hobbies include sketching, doing digital art, and watching anime. I also love hanging out with friends and family during my free time.

India Jackson, MS

I'm a mathematician, a PhD astrophysics candidate, and self-taught software developer with a deep passion for coding/programming. I am the sole creator of a mobile game which is available on the App Store and Google Play Store. I've also been approved to complete a software platform for my PhD thesis. I am looking forward to gaining a solid foundation of data structures, algorithms, and developing my coding skills to attain my dream of becoming a physics programmer through this apprenticeship.

CONTACT

Phone: (404) 398-9329

Email: indiajacksonphd@gmail.com

LinkedIn: India Jackson, MS

EDUCATION

2024 Georgia State University
PhD Astrophysics

2022 Georgia State University
Master of Science Physics

2013 Georgia State University
Master of Science Mathematics

2010 Georgia State University
Bachelor of Science Mathematics

WORK EXPERIENCE

Georgia State University
Graduate Teaching Assistant in Physics and Astronomy Labs

Atlanta Metropolitan State College
Mathematics Instructor

Georgia Piedmont Technical College
Mathematics Instructor

Atlanta Technical College
Mathematics Instructor

INTERNSHIPS

Winter School in Quantum Computing (*2020*)
Institution: Emory University, Physics Department

NASA Intern in Solar Physics (*2019*)
Institution: NASA Johnson Space Center
Institution: Space Medicine Operations Division
Institution: Space Radiation Analysis Group

NASA Living With A Star Summer School (*2018*)
Institution: University Corporation for Atmospheric Research

Boulder Space Weather Summer School (*2018*)
Institution: National Center for Atmospheric Research

PROGRAMMING SKILLS

HTML	CSS	JavaScript	NodeJS	Unity
Python	Java	C#	C++	AWS

PERSONAL PROJECTS

LGPHY Arcade:
A retro style 2D side scroller game. With 3 levels in one scene, all random, 40 AI driven enemies, and anti gravity this game allows you to shoot enemies, run on the ceiling, and collect coins and gems, and travel through teleportals all while supporting local small businesses and independent music artists.

App Store: https://apps.apple.com/us/app/lgphy-arcade/id1564197834

Google Play Store: https://play.google.com/store/apps/details?id=com.lgphy.arcade

PhD Project:
Implementation of A Statistical Machine Learning Models for Space Weather Prediction in a Cloud Computing Environment

(All of these components are still under progress)

Python Editor: https://www.lgphy.com/editor

Jupyter Hub EC2 Instance: jupyter.lgphy.com

Prospectus Presentation: https://www.lgphy.com/prospectus

RESEARCH

A Statistical Study of Solar Flares, Coronal Mass Ejections and Their Associated Solar Energetic Particles (*2019*)
Advisor: Kathryn Whitman, PhD.
Institution: NASA, Space Medicine Operations Division: Space Radiation Analysis Group

Systematic Data-Driven Analysis and Tools for Spatiotemporal Solar Astronomy Data Contributor (*2017*)
Advisor: Petrus C. Martens, PhD.
Institution: Georgia State University, Physics and Astronomy

Fractal Dimensions of Magnetic Polarity Inversion on the Surface of the Sun Using Statistical Analysis (*2016*)
Supervisor: Petrus C. Martens, PhD.
Institution: Georgia State University, Physics and Astronomy Department

Justin Osinowo

1940 Rambling Lane Apt. 824 Atlanta, GA 30315
678-559-6172
JOsinowo25@gmail.com

EDUCATION

2017 – 2023 Georgia State University
Bachelor of Computer Science

SUMMARY OF QUALIFICATIONS

- Over 8+ years of outstanding customer service, communication, and interpersonal skills dealing with a vast number of clients.
- Detail oriented, strong organizational skills with ability to carry out tasks with minimal supervision.
- Ability to work effectively with diverse personalities in a tactful, decisive, and resourceful manner.
- Proficient in Microsoft Office Suites, Mozilla, Internet Explorer, Camtasia, and basic Java/Python coding

PROFESSIONAL EXPERIENCE

Kaya Logistics, Inc. Atlanta, GA **August 2021 – July 2022** *Driver Associate*

- Coordinate with Amazon to deliver to residential, business, and commercial customers.
- Prepare and collect parcels for incoming orders and load products weighing up to 50lbs into vehicle using assistive equipment when necessary.
- Verify each delivery while maintaining a 100% on-time delivery rate within strict time constraints.
- Demonstrate exceptional customer service using fine-tuned interpersonal skills to appropriately represent Amazon.
- Operate handheld scanner on all outgoing parcels to document packages, mileages, and expenses.

Longhorn Steakhouse Atlanta, GA **2016 – 2021** *Server/Bartender*

- Knowledgeably recommended menu items based on guests' needs and preferences, including upselling complementary dishes and drinks.
- Maintain seamless day-to-day restaurant operations by deploying in-depth knowledge of appropriate food handling techniques, such as proper soup temperatures and equipment cleaning procedures.
- Managed orders and financial transactions using digital Point-of-Sale system.
- Demonstrate strong familiarity with alcohol stocks and formal entrée pairings to effectively promote them to guests.

Wrigley's Atlanta, GA **2014-2016** *Hand Packer*

- Coordinate with a shift lead on reaching a daily quota of packing and unpacking different types of Mars. Inc products
- Be able to lift up to 50 lbs of materials to swap placement of gum.
- Scanning and sorting incoming and outgoing stock including receiving, stocking, and stacking gum products

Ivan Valdez

Atlanta, GA
(770) 885-2329 | ivanvaldez140@gmail.com | github.com/ivanvaldez11

EDUCATION

GEORGIA STATE UNIVERSITY Atlanta, GA
Bachelor of Science in Computer Science Expected graduation date: July 2023

- Relevant Coursework: Digital Image Processing, Data Structures, System Level Programming,Programming Language Concepts, Design Analysis Algorithms, Operating Systems, Software Engineering, Cybersecurity, Mobile App Development
- Awards: Dean's List, HOPE scholarship

PROFESSIONAL WORK EXPERIENCE

Waffle House Atlanta, GA
Rockstar Cook/Assistant Manager December 2020 - Present

- Supervised day-to-day responsibilities to ensure adherence to store guidelines to eliminate any accidents or safety concerns, avoid issues related to customer service, and improve net sales.
- Trained new hires on behalf of the manager when needed and coached them whenever guidance was needed
- Devoted special emphasis to punctuality and worked to maintain outstanding attendance record, consistently arriving to work ready to start immediately.
- Developed team communications and information other employees needed to know about customer needs, work schedule meetings.

RELEVANT EXTRACURRICULARS

CODE PATH - INTERMEDIATE TECHNICAL INTERVIEW PREP Virtual
Student September 2022 - November 2022

- Attended this 10-week course twice every week with instructors and a group of 5 members
- Learned about different programming methods and algorithms that are necessary for the industry while preparing for interviews

NOTEWORTHY PROJECTS

JEOPARDY GAME
JavaScript/Web Programming (GitHub) September 2022

- Built a jeopardy game with JavaScript/html/CSS/PHP. (GitHub).
- Participants Signup/Login for a homepage where they start the game.
- The game records all scores, it starts with a popup question generated by JavaScript where participants choose from.
- At the end of the game, all the scores are generated, and the winner pops up.

FILE MANAGER
Java/Operating System (GitHub) *May* 2023

- User-friendly Interface: A file manager application should provide a clean and intuitive interface, allowing users to navigate and manage their files and folders efficiently.
- File Organization: An effective file manager should enable users to easily organize their files and folders.
- File Transfer and Synchronization: A file manager should facilitate seamless file transfer between different devices or locations.
- File Preview and Editing: A good file manager should provide file preview capabilities, allowing users to quickly view the contents of various file types without opening separate applications.

RELEVANT TECHNICAL SKILLS

Languages: English (Understood and Read and Write**)** English (Understood and Read and Write**)**
Programming Languages: Java, C++, JavaScript, Flutter, PHP, Html, MATLAB
Tools: IntelliJ IDEA, Eclipse, MS Visual Studio, Scene Builder, Google Drive, GitHub
Operating Systems: Windows, MacOS
Skills: Communication, Collaboration, Fast-Learner, Effective Worker
Certification: Microsoft Word 2016, Microsoft PowerPoint 2016

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Section III. Teamwork Basics

Introduction

In any collaborative project, establishing ground rules and norms is essential for fostering effective teamwork. These guidelines help team members understand their responsibilities and set attainable expectations. This section aims to outline key ground rules based on the provided information, focusing on work norms, facilitator norms, communication norms, meeting norms, consideration norms, and group goals.

Work Norms:

1. Work Distribution: The team will informally assign work among members, ensuring an equal distribution of tasks based on each person's strengths and interests.

2. Deadlines: It is preferable to stick to the instructor's deadlines. Team members should complete their assigned tasks as soon as possible to facilitate the project's timely progress. This is summer, we have to move quickly and efficiently.

3. Accountability: If a team member does not accomplish their given task, it should be documented in the weekly scheduler form.

4. Work Review: A checklist will be created to review completed tasks. Team members can mark off completed items to track progress and ensure all project requirements are met.

5. Quality Standards: The team aims to deliver a finished project that meets all specified requirements. High-quality work will be defined as fulfilling all project expectations.

Facilitator Norms:

1. Facilitator Selection: The facilitator role will be self-chosen, allowing team members to volunteer based on their interest and availability. This rotation promotes shared responsibility and ensures everyone has an opportunity to lead the team. Their responsibilities will include those that were given in the assignment.

2. To ensure effective team progress, a facilitator will volunteer each week. The facilitator will be responsible for guiding the team. The facilitator's role will rotate among team members, allowing everyone to contribute leadership responsibilities. The following is the facilitator schedule for the remaining weeks of the course:

    - June 12: Sehaj
    - June 19: India
    - June 26: Ivan
    - July 3: Justin
    - July 10: Sehaj
    - July 17: India

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- July 24: Ivan

Communication Norms:

1. Communication Medium: Discord will serve as the primary communication channel. However, when necessary, virtual face-to-face meetings will be scheduled to facilitate more detailed discussions.

Meeting Norms:

1. Meeting Schedule: The team will meet every Sunday at 1pm to discuss project progress, address concerns, and plan for the upcoming week.

2. Meeting Coordination: Rather than assigning a single person to coordinate meetings, the team will promote shared responsibility and equal participation.

3. Meeting Location: Since this is an online course the team will meet in an online setting such as Microsoft Teams and Discord.

4. Late Attendance: Being on time is important but minor lateness will be overlooked, as long as it does not disturb progress.

5. Absences: If a team member misses a meeting, it is expected that they tell us about their absence in advance. As long as the absent member completes their assigned work, we can communicate through Discord to keep everyone informed.

Consideration Norms:

1. Conduct During Meetings: Given the online nature of the course, eating and smoking are not applicable during meetings.

2. Dominant Discussion: If a team member dominates the discussion, others can politely ask for equal participation and allow everyone an opportunity to contribute.

3. Norm Adjustment: If any team member feels uncomfortable with existing norms or practices, they should voice their concerns openly.

Group Goals:
The team's shared goals for the software engineering course are as follows:

- India: Achieving an A grade in the course.
- Sehaj: Aiming for an A+ grade while also seeking opportunities to learn and expand knowledge.
- Justin: Striving for an A grade and gaining practical experience in a real-life software engineering setting.
- Ivan: Developing web programming skills further and attaining an A grade.

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Section IV. Project Topic

The Virus Validator:

For our project, we decided to go for something that would be beneficial to everyone and not just target a certain demographic. The Virus Validator will be a one-stop-shop web application. It would ask the patient to select from a list of symptoms they are feeling and based on those symptoms they will be given a “mock” diagnosis of an illness that closely resembles those symptoms. Disclaimer: THIS IS NOT A REPLACEMENT FOR A MEDICAL DOCTOR’S DIAGNOSIS; but it would allow for a quick response when it comes to self-diagnosing. We are also exploring the options of a map including a list of medical professionals that offer treatment, a scheduler allowing to set up appointments, and patient validation.

Testing:

Each developer will be a tester and debug the application as needed. Having multiple people testing the functionality of the application will allow for more errors to be corrected and overall improve the user experience. The instructor should have no problem viewing the application as it will be uploaded to an online server to avoid having to download anything.

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Section V. Scheduling and Planning Table

Week: June 12						
Assignee Name	Email	Task	Duration (hours)	Dependency	Due date	Evaluation
India Jackson	ijackson1@gsu.edu	Teamwork Basics	4-5 hours	None	6/16/23	100%
Sehja Gandhi (F)	sgandhi12@student.gsu.edu	Problem Statement	4-5 hours	None	6/16/23	100%
Ivan Valdez	ivaldez1@student.gsu.edu	System Requirements	4-5 hours	None	6/16/23	100%
Justin Osinowo	JOsinowo1@student.gsu.edu	Project Topic	4-5 hours	None	6/16/23	100%

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Section VI. Problem Statement

Product Description:

The product is a software-engineered application designed for virus validation, specifically for managing guest visitors to office meetings who need to undergo validation for viruses such as COVID, Monkeypox, and others. The application will incorporate a validator and scheduler functionality to efficiently manage and monitor the entry of guests. It can be thought of as a "VIP" list that allows authorized individuals into a secure building after validating their virus status.

Target Audience:

The application is primarily intended for office or building administrators who need to manage and regulate the entry of guest visitors for meetings. It could be used in various settings, such as corporate offices, government institutions, research facilities, or any organization concerned with maintaining a secure and healthy environment.

Problem Solution:

The software application addresses the challenge of efficiently managing and validating the virus status of guest visitors. It streamlines the process by providing a centralized system for scheduling appointments, validating visitors' virus status, and granting access to authorized individuals. This reduces the risk of virus transmission within the office premises and ensures a safer working environment.

Available Alternatives:

Without the software application, the validation and management of guest visitors would likely involve manual processes such as checking vaccination certificates or test results manually, maintaining physical visitor logs, and manually coordinating appointments. These manual processes can be time-consuming, error-prone, and difficult to track effectively.

Project Significance:

This project is compelling and worth developing because it offers a modern and efficient solution to a pressing need in today's context of heightened health concerns. With the ongoing global pandemic and the need to control the spread of infectious diseases, an automated system that can validate and manage visitor virus status will greatly enhance the safety and security of office environments. The availability of resources and technology makes it feasible to build such a system.

Top-level Objectives, Differentiators, and Scope:

The top-level objectives of the product are:

1. Streamline the process of validating virus status for guest visitors.

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2. Automate the scheduling of appointments and coordination of visitor entry.

3. Enhance the security of office premises by allowing access only to authorized individuals.

4. Improve the overall efficiency and effectiveness of managing guest visitors.

The key differentiators of this product are its comprehensive validation and scheduling capabilities, which are tailored specifically for managing guest visitors in office settings. The scope includes the development of a user-friendly interface, integration with virus testing systems or databases, appointment scheduling features, visitor validation mechanisms, and access control integration.

Competitors and Novelty:

There might be other software solutions or manual processes available for managing visitor entry, but the novelty of this approach lies in its specific focus on virus validation for guest visitors. By incorporating validation mechanisms and integrating with testing systems, this software offers a more streamlined and automated solution compared to existing alternatives.

Technical Interest:

From a technical point of view, this project presents several interesting aspects. It involves integrating with external systems or databases for retrieving virus test results, implementing secure access control mechanisms, designing a user-friendly interface, and optimizing the overall performance of the application.

Client and Admin Login:

Yes, the system can incorporate both client and admin logins. The client login allows guest visitors to schedule appointments and provide their virus test information. The admin login provides access to the administrative features of the application, allowing administrators to validate visitor status, manage appointments, and monitor the overall system operation.

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Section VII. System Requirements

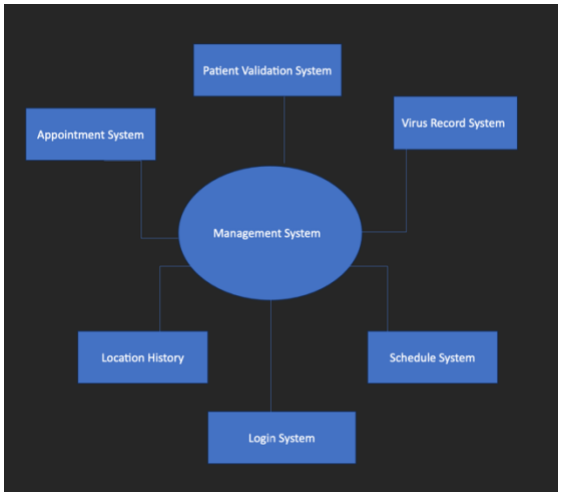
Overview:

Living in our society today, it is important to get help when we feel sick. This is why we chose Virus Validate. In Virus Validate we should be able to let the user decide on which virus they have. According to this answer they would have certain locations on where they can go and get the specific treatment. Of course, all locations will have different dates and times when they will be free and open for the user. In this same idea they should be able to have a scheduler where they can pick a date where they can go to an office and be able to get treatment. To validate the user, the medical staff will have a validator that will verify the appointment. An example of this validator can be a code that will only be known by the user and "the office". This would help with the security of the office to let only the user with this code into the building.

This will be a dynamic web application. Unlike static websites, This would mean that the website would contain dynamic web applications, allowing for real-time updates and user input. One of the key strengths of dynamic web applications is their ability to deliver dynamic content to users based on their preferences, actions, or other factors. Another advantage of dynamic web applications is their scalability and flexibility. It is designed to handle large amounts of data and concurrent user requests, making them suitable for this website that could have high traffic. Developing dynamic web applications requires expertise in web programming languages such as HTML, CSS, and JavaScript. In conclusion, dynamic web applications offer an interactive and personalized experience to users, allowing for real-time updates and user input. Their scalability, flexibility, and integration capabilities make them a powerful tool for creating modern and engaging websites.

Context Diagram:

Below is our context diagram which helps us break down the boundaries of our systems and to decide what components of our system are top priority.



As you can see from the screenshot there are six important system that we need to breakdown:

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1. Virus Record System: In this system it will help to know which virus that can help with. Since our clients are medical offices and corporations, they will give the options on which virus they can treat. This system will help to store crucial information about different viruses including their characteristics, transmission methods, and different treatment options. Examples of this could be the coronavirus, flu, and chickenpox.

2. Location History: Since our clients are medical offices and corporations it is important to know all the options the patient has to get the treatment for each virus. Since we will have multiple users on the website it will help the user to know the locations of these offices and corporations. It will help the user select the location that will be closer to them. Examples of this could be pharmacies like CVS and Walgreens or hospitals such as Grady Memorial and Emory University.

3. Login System: There will be two types of logging systems, user and admin. The user would be the patient that would be able to make an appointment using personal information such as their name and address.. This would also help our clients (medical professionals) to know the person's name to get more background information before they come in. The admin will be the medical professionals and they will be able to see the appointments. This will be able to show their schedule and total number of patients coming in that day. Examples of this could be a user login in as me Ivan and an admin login could be the medical professionals.

4. Schedule System: The admin will be medical professionals also known as our clients. They will be able to select days and time that will be available for the patient to select. The patient (user login) will be able to see the time and dates that were selected by the admin and they would select which is best for the user. The hospital would be open 24 hours and they could have thirty minute intervals.

5. Appointment System: The user login will their selected virus and the next screen will show all the medical professionals that will be able to get treatment from the selected virus. Some viruses can have multiple options to get treatment, therefore, the next screen would show all the times, dates, and medical professionals that would be available for that treatment. The admin would be able to see the name of the patient and the time and treatment they have selected. An example of this would be the patient, Ivan, has scheduled an appointment for the coronavirus shot. The patient would then be prompted to select either the Moderna or Pfizer shot. Depending on the selection, Ivan will go to the closest medical professional with the preferred method of treatment within a thirty minute window.

6. Patient Validation System: After the process of going through the appointment system the patient and the medical admin will be given a code confirming the appointment. This will help with security for the medical professionals. For example, the patient Ivan is given a code of "AAAA". When he shows up to the hospital, he will display the code "AAAA" to the medical admin to let them know that he is the proper person that will be given the certain treatment.