Risk Management Document

for

Online PCR Tests Booking

at The Department of Electrical and Computer Engineering,

The University of the West Indies

St Augustine Campus

Trinidad

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***Document Change Record***

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| Date | Version | Author | Change Details |
| 14 Sept 2021 | 0.0 | Akshay Seedath | * Initial commit * Draft of initial risks |
| 28 Sept 2021 | 0.1 | Akshay Seedath | * Added structure headings to the document * Added Top 10 Risk List, table for resolved risks and mitigation strategies * Added additional risks and redefined existing risks that were ambiguous |
| 03 Oct 2021 | 0.2 | Akshay Seedath | * Updated Top 10 Risk List and Resolved Risks * Completed draft of Introduction and Risk Management Procedure sections |
| 05 Oct 2021 | 1.0 | Akshay Seedath | * Removed Top 10 Risk List from document and stored the list as a separate file * Added Risk Exposure values * Added additional risks |
| 10 Oct 2021 | 1.1 | Akshay Seedath | * Priorities added to Risk Identification list for clarity of risk |
| 31 Oct 2021 | 1.2 | Akshay Seedath | * Added risks, mitigation and assessment values |
| 12 Nov 2021 | 1.3 | Akshay Seedath | * Updated format of document * Added new mitigation strategies |

# 1 Introduction

Assessing and managing risks are critical practices in software engineering and development. Without correct implementation of risk-oriented practices, a software team is certain to face many challenges in their journey to a release product.  
The Online PCR Tests Booking Platform has, within its design and development, specific risks that fall under many categories which are all covered in this document.

## 1.1 Purpose of Risk Management Plan

Risk management consists of two main areas: risk assessment and risk control. These practices allow the managerial team to identify, assess, prioritize risks so that they can visualize the ways that the project can go wrong and take the necessary steps to address them. Further, this also allows for planning of mitigation of these risks, tracking resolutions of risks and allows for proper monitoring of current and future risks.

# 2 Risk Management Procedure

Risks that can harm the project by delaying the release of the product or increasing the schedule will be identified by the risk manager as well as other members of the managerial team. The risks will then be analyzed depending on their likelihood and potential delay and then prioritized into a ‘Top 10 Risk List’. This list will be updated every week after the weekly meeting with the development and testing teams. This process enables continuous and focused monitoring of risks throughout the entire software development process.

## 2.1 Process

After project risks have been identified, assessed and prioritized, a suitable mitigation strategy will then be developed with the manager/s associated with the specific mitigation measure/s. These mitigation measures will be utilized as soon as possible to reduce the impact of an existing risk or reduce the likelihood of the development of the risk. Closer attention will be given to risks with higher priority and risk resolution progress will be logged by the ‘Top 10 Risk List’ along with another table that includes all resolved risks. The risks in the ‘Top 10 Risk List’ will need to be reassessed in order of priority each week which will force the Risk Officer and Project Manager to look at risks regularly and update the list with any changes.

## 2.2 Risk Identification

Risk identification will involve the entire managerial team as well as the development and testing team to identify all possible risks of the project. Identification of the risk will also include the category of the risk, a description of the risk and its potential impact in terms of the project schedule, effort estimates and project deliverables.

These details will be included in the Risk Assessment Table.

## 2.3 Risk Analysis

Risks will then be analyzed by using Risk Exposure (RE) and by whether the risk is potential, present or resolved. Risk Exposure is the product of the probability of the risk occurring by the potential weeks of delay that the risk can cause to the schedule. The RE will be calculated using a group consensus and will be used to roughly prioritize the risk but the decision of priority comes to the Risk Officer’s and Project Manager’s discretion.

### 2.3.1 Qualitative Risk Analysis

Risks were qualitatively measured in the response of each manager for the probability of a risk occurring in the calculation of the RE. “Adjective calibration” was used to determine the probability of occurrence by the following responses:

**Probability**

* Highly likely – Greater than 80% chance of occurring
* Likely – Between 60% to 80 % chance of occurring
* Possible – Between 40% to 60% chance of occurring
* Unlikely – Between 20% to 40% chance of occurring
* Highly unlikely – Less than 20% chance of occurring

### 2.3.2 Quantitative Risk Analysis

During the calculation of RE, the potential impact was also estimated in terms of weeks of delay to the project which ranged from 1 week to X weeks. The adjective responses from the probability of the risk were also converted to quantitative assessments and multiplied by the weeks of delay to give the RE which was used to roughly prioritize the ‘Top 10 Risk List’.

## 2.4 Risk Monitoring, Controlling and Reporting

A “Top 10 Risk List” will be used to monitor and update the risks from week to week. The position of risks on the table shall also be tracked as well as their priority depending on their potential impact on the project.

# 3 Risk Plan 3.1 Risk Assessment

A Risk Assessment was done where risks that had the potential to disrupt the project were identified, categorized and analyzed by their risk level which is the calculated Risk Exposure (RE) value. Risk Priority was also assigned to the risk, by the discretion of the managers, based on the severity of the risk as well as the RE.

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| **Risk Priority** | **Risk Category** | **Risk**  **(Risk Exposure)** | **Description** |
| High | Schedule Creation | Schedule may be unachievable  (1.12) | The current schedule for completion of the project may be too short to achieve a working system with all the stated requirements. |
| High | Personnel | Unfamiliar and inexperienced with programming languages  (1.28) | The development team has not worked with all the programming languages involved in the project. Learning the languages and then applying it properly to the project will take time and may delay the delivery of the final product. |
| Medium | Product | Developer gold-plating  (0.50) | Some requirements may be improved upon more than what is necessary, or gold-plating, for the current version of the project. The team may also spend more time on requirements with less priority than was intended by management. |
| High | Personnel | Optimistic development team  (0.87) | Team members have little experience with the software development process and various languages but propose a large scope before commencing the project. This may lead to many incomplete requirements since the scope was too wide. |
| High | Schedule creation | Poor estimation of component completion time  (1.40) | Some activities during the development of the software may take longer than expected due to underestimation of completion of the component. This may cause unforeseen delays for other activities (tasks) in the software schedule. |
| High | Organization and management | Lack of team structure  (0.74) | Team members may be unfamiliar with each other and may struggle to communicate their challenges and weakness to the team.  Team members may have different levels of competence with developing or testing and some may get left behind while other members push forward.  Members may be placed in a team that does not reflect their strengths. |
| Medium | Personnel | Team member lacks proper equipment  (0.67) | A testing team member lacks a personal computer which prevents them from properly engaging in the project. This can cause the member to be left behind or not participate in project activities. |
| Medium | Personnel | External risks  (1.40) | Assignments, labs and other third-party interference may cause delays and extend the current timeline for the project. |
| Medium | Product | Product is of low quality  (1.00) | Quality of the product may be sacrificed by the development teams to reach milestones and produce prototypes on time. Quality may also be reduced if development team do not have a good grasp of development tools and programming languages. |
| High | Personnel | Personnel work slower than expected  (0.87) | Team may work slower than expected by the schedule due to lack of experience or familiarity with software development. |
| High | Personnel | Communication among team members  (1.04) | Members between and among the testing and development teams have shown issues with communicating changes they made as well as progress and issues. |
| High | Personnel | Difficulty with productivity tools  (1.16) | Members have challenges with understanding and using productivity tools such as Git and Asana |

## 3.2 Risk Control

Mitigation strategies were made for all the identified risks from the Risk Assessment Table above. These strategies were followed and carried out by the relevant project managers and progress towards risk resolution was tracked in a weekly “Top 10 Risk List”.

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| **Risk (RE)** | **Mitigation Strategy** |
| Schedule may be unachievable  (1.12) | * Weekly meetings with team and discussion on current projection of project schedule. * Scope reduction of the project may take place to facilitate a more achievable project within the timeframe. |
| Unfamiliar and inexperienced with programming languages  (1.28) | * Have training sessions with the team to give a general overview of the various languages and tools. * Provide resources and links support for the various languages to become more familiar with the language and improve skills. |
| Developer gold-plating  (0.50) | * Code and modules shall be reviewed alongside the requirements and check whether there is “extra design features”. * Design a schedule for the developers to prevent them from spending too much time on a specific module. * Review progress in the project at weekly meetings to identify early signs of golf-plating * Use prototyping to intermittently check if gold plating is occurring. |
| Optimistic development team  (0.87) | * The realities of the amount of work involved in a project of this type will be explained to the teams during meetings to ensure that they understand the magnitude of work they are expected to encounter. |
| Poor estimation of component completion time  (1.40) | * Proper planning of tasks between managers and the design team. * Consistent communication between members of the development team to revise and update time estimations with managers. * Provide overview of project schedule and estimations on time for completion to members if necessary |
| Lack of team structure  (0.74) | * Team building exercises during scheduled meeting times. * Teamwork shall be encouraged amongst members and roughly measured during weekly meetings by questioning whether all members follow what changes were made during the previous week. |
| Team member lacks proper equipment  (0.67) | * Advise the developer to use a computer café. * Give the team member a role that involves less involvement in the tasks of the team. * Other team members should make a summary of changes done so the affected team member does not fall too far behind. |
| External risks  (1.40) | * Weekly surveys shall be conducted and personal issues that may hinder the project schedule shall be noted and addressed as seen as appropriate by HR. |
| Product is of low quality  (1.00) | * Quality assurance activities will be done and accounted for in the project schedule. * Prototypes will also serve as a way to check quality assurance of the product. |
| Personnel work slower than expected  (0.87) | * Additional resources specific to issues being faced will be provided to the team. * Training sessions with team * Address technical issues with members as quickly as feasibly possible * Buddy system to improve productivity |
| Communication among team members  (1.04) | * Provide additional team building exercises * Encourage the participation of members in weekly meetings to give thorough updates on their progress * Encourage informal communication among members to give updates on changes they make or issues they are facing |
| Difficulty with productivity tools  (1.16) | * In-depth training sessions with members who have issues with productivity tools |