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| --- |
| Sydney international school of technology and commerce |
| **ROSTER Management system** |
| **Business proposal** |
| **Organizational Unit** |
| **Roster Management System**  **Bachelor of IT-Digital enterprise.** |
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| --- |
| In the document Assignment 1, we have identified a existing problem and Developed an IT related solution followed by identifying functional and non-functional requirements related to the particular issue. In addition to those documents, this document is prepared as final documents which illustrate about final requirements, the proposed design and the project management implementation approach. |

DOCUMENT ACCEPTANCE and RELEASE NOTICE

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## Introduction

In this documentation, the team will present the final requirements, design proposal, project management approach based on project management tools and techniques. Team will represent approach using work breakdown, project and resource plan as well as communication plan to develop the IT solution to the difficulties faced by the rooster manager in Abacus IT Rental Company.

As per the case the rooster manager faces difficulties handling the temporary staff when the projects are too big and required lot of temporary staffs. Also, using paper based tracking and management is less reliable and consumes a lot of time. Using paper is not the cost effective and environment friendly method of tracking and managing the team.

To solve these problem team has proposed the Rooster management system which will help to manage the temporary staffs needed for the project as well as act as communication channels and staff management portal as well. Roster Management System is web-based software that lets you manage the availability of your workforce and allocate work to them. It helps you to create rostering rules, manage roster updates and create availability reports. You can add holidays, unscheduled leave and roster holidays to your rostering rules.The Business Case

**Purpose of the Business Case**

Abacus IT rent has been a reputed IT rental company in Australia. It works on various projects such as NSW elections. As this company does big projects time to time, the workload has never been same every week. For the particular project be completed by time, they sometime need extra staffs. When new casuals are hired, it has been a mess during sign in and sign out as 100 of people have to sign at the same time. As the workload is always not the same, ROSTER Manager has to call up required number of people for that particular day. It gets really tough for the officer to contact each of them and to get their availability when the number is this high.

Due to this very reason, roster manager has to deal with tough time during peak days. Even the casual staffs find it very hard to communicate with the company and create confusion for their daily tasks.

Abacus IT Rent practices traditional paper methods in order to record timesheets. It’s confusing and time consuming but the data of casual staff present there can be used in our report. The identified budget cost for the ROSTER Management system is approx. 25,000$. This budget might look much but the in overall this only helps to minimize the total cost for the company. Casual staff can indicate there available days for work themselves. They could know their role for the day. ROSTER Manager does not have to contact every individual instead he/she can inform the team about workload and required staff for particular day/week more easily. There is the risk that new staff might find the system hard to use rather than just wring there hours in paper. This might create confusions about upcoming shifts to staff.

**Situational Assessment and Problem Statement**

As the organizations are moving rapidly from traditional ways to more technological. New technology has helped companies to progress rapidly and decrease their time and unnecessary expenses. Current practice of paper for timesheet allows a lot of time and confusion to the casuals. They do have staff problem due to miscalculation of workload or error by ROSTER manager, after all they are just human being and humans do makes mistakes. The current project is proposed to build a complete technology system that looks after casual staff management. This helps the organization to reduce paper cost forever and practice a formal / standard form of sign in and sign out process. The company will not face short of staff during working hours of day/week. And the manpower is allocated perfectly by allocating certain task/roles to individuals/group prior to stating of the job.

# Assumptions and Constraints

Following assumptions are made at the beginning of project,

* The management system will have backend data such as staff personal information.
* Every member does have access to their electronic device. Staff should perform daily sign in and sign out on their device.
* Staff should perform available virtual task according to their upcoming roles. It is more essential for team leader to have required skills to perform and provide training.
* Shortage of casual staff will be low during raining days.
* The system updates data every 2 minutes.

And constraints for the Project are as follows.

* The project is dated to start on March 1, 2022 for start.
* Project sponsor had asked to complete project by July 30, 2021.
* Total budget required for will be 25,000$.
* Maximum 5 members are allowed for completion of this project.

# Identification and Analysis of Options

Following are the options recognised for this project: -

Option 1- continuing with the current paper sheet practice.

Option 2 – Purchasing available ROSTER Management system.

Option 3 – Building company’s own ROSTER management system.

### Option 1 – continuing with the current paper sheet practice

Benefits: it can be used to record data and time sheet for staff.

Dis-benefits: requires manual input of data and manual handlin.

Costs: 20$/week for paper and 100$/week for printing expenses.

Risks: high risk of error. It is not suitable for long run.

Stakeholder impact: Stakeholder demands changes in this system more technical way.

Issues: all the staff need manual input, manual calculation of hours and pay.

### Option 2 – Purchasing available ROSTER Management system

Benefits: saves cost that is required to develop own system.

Dis-benefits: will not have full authorization over the system as required and requested by company.

Costs: 1000$/month subscriptions charges.

Risks: all the features such as training and availability selection may not be available.

Stakeholder impact: Stakeholder believes this option might not be able to meet all the required features.

Issues: Costs a lot more in the long run.

### Option 3 - building Company’s own ROSTER management system.

Benefits: Digital input of data, automatic calculation of hours and pay. Makes the work of manager a lot easier and he/she can focus on more important task for the business.

Dis-benefits: high start-up cost.

Costs: 25,000$ during the begging of the project.

Risks: loss or deletion of staff data. Not showing up on work even after work is allocated to staff. Unauthorized access of training through the system and other information by the staff that uses it may occur

Stakeholder impact: 2 of 3 stack holder are agrees with this option and one demand to add advance form of privacy.

Issues: the system need to be updated regularly with latest material available.

## Comparison of Options

All three above mentioned options are compared in the table below: -

|  |  |  |  |
| --- | --- | --- | --- |
| Criteria | Option 1 | Option 2 | Option 3 |
| Benefits:   * Stakeholder A * Stakeholder B | 4  2 | 6  6 | 9  10 |
| Dis-Benefits:   * Stakeholder A * Stakeholder B | 9  9 | 4  4 | 1  1 |
| Costs:   * direct * indirect * recurrent | 20$ for week  0$  100$ | 0$  0$  1000$/ month | 25,000$  0$  100$/ month |
| Risks:   * Initial * minimisation/ mitigation costs * resulting risk | Miscalculation or miscommunication.  Low mitigating cost.  Loss of time which is really important for any organization. | Desired features may not be available.  This issue is hard to mitigate unless new system is added that has all required features  Failure of system and project | Unauthorized access by third party using user account.  Can be slightly costly to add additional security feature in the system.  Can result in security risk. |
| Stakeholder Impact: | Stakeholder demands technical update for this system. | Stake holders do not believe option 2 can meet the requirement. | Stakeholders agrees with this option however demands more security features. |
| Issues: | Manual handling of all available data. | Cost more of monthly subscription in a long run. | Need of regular update with latest available resources. |

Note: - Rating is ranged for benefits and dis-benefits from 1-10 where 1 indicated the lowest rating and 10 in for the highest.

## Recommended Option

Option C scored the lowest rating on it dis-benefit and highest for its benefit for organization from the stake holders compared to option A and B. suitable option for a project cannot always be defined by the cost required or spent. By overall comparison and with interest of stakeholder, option C (building company’s ROSTER management system) does best meet the need and requirement of company. Advantage of a project cannot always be defined by the cost required or spent.

## Final requirements

In order to better manage human resources and communicate work goals more conveniently, we decided to develop ROSTER Management system. The main function is to manage the working hours of the casual staffs hired by the company. The employees first log in to the system to provide the available working hours, and the managers will then assign the matching work items. Finally, the work results of the staff can be evaluated through the recorded working hours and work results. .

The system will be completed in the form of a web page containing a database containing login and registration and dashboard pages used by administrators.

**1 Functional Requirement**

Functional requirement states what a system should do or must not do. It should indicate how the system will react to certain situation or inputs. Some of the functional requirement identified for our project is as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Notation | Use case | Operation | Dependability | Constraints |
| Staff Registration | New user registers in system | Complete the following  Full Name: -  E-mail: -  Phone: - | All options must be filled. | Phone and email must be valid |
| Sign-In | Staff can login in with correct credentials | Requires Phone number or email and password | Credentials must match | Must have 2 Factor Authentication |
| Account recovery and password change | User can change recover their password | Should provide email address and OTP | New password must contain at least a  Capital letter:  Small letter:  Special character: | Requires mail verification |
| Dashboard | Staff will see their upcoming Roster | Select dashboard | Only roster manager and individual user will have view authorization | Must be signed-in |
| Availability check | Manager can check availability of staff | Look into the availability part | Staff will be only available after they provide it only | Must have at least 6 casuals available |
| Availability | Staff can confirm their availability | Provide the availability | It can be accessed remotely | Staff must save their availability |
| Training | Staff can practice their task | Access the training videos | Training material will be updated regularly | Team leader should provide with the material |
| Working hours | User will be able to see working hours | Calculation of total hours | Total hours of each day and week is recorded | Must have login session |
| Clock-in/Clock-out | Staff daily hours are recorded | Clock-in and clock-out every day | Clock-in/out can only be done in company tablet | Staff must sign in with passcode |
| Roster manager by manager | Manager can assign, remove and change | Assign and update tasks | Only be accessed by manager | Staff must be registered |
| Task History | Previous completed skilled task will be added | Update completed task | Task in this section only be done by admin | Should have completed skilled task in past |
| Document verification | Verify any skilled documents for the staff | Upload certificates for verification | Does not have to provide if don’t have any | Must be reviewed by the manager |

* 1. **Non-functional Requirement**

Non-functional requirements aim at system properties and constrains. The lists of non-functional requirements involved in this project are described below:

2.2.1 Dependability requirement

Dependability shows the end-user level of trust. A system must be repairable, maintainable and capacity to tolerate errors. The requirements are described below.

2.2.1.1 Usability

It is simpler to utilize our application even with practically no direction. We have attempted to simplify this application and easy to use every which way by keeping its plan basic and language of our substance less complex. Orientation sessions will be held after lunching the project so that staff will have minimum error using the system.

2.2.1.2 Performance

Our application's execution is extremely extraordinary as its response time while completing any of its reaction time is low. Likewise, we understand that low reaction time suggests better execution. Thus, we can assume that exhibition of our application is incredible.

2.2.1.3 Scalability

Our application can adjust to extended use or prepared to manage more information as time propels. In another word, we can say that our application can /manage multiple staff without degrading its exhibition. Along these lines, we can infer that our system is versatile.

2.2.1.4 Reliability

ROSTER Management System can be considered as a solid. We can just tell as the system is configured, testes and verified by the manager. In this way, it very well may be considered as solid. We performed testing to know whether or not our application is solid.

2.2.1.5 Availability

Our system has reliability of 99.61% to match the requirement. Data base are backed up in Sydney office and Perth head office server. This will help to keep the system running in case of any software and hardware failure. All the update and maintenance must be done in-between 12am-4am when the work load is low or null. The system must not be offline more than 1 hours in each maintenance period.

2.2.1.5 Security

Appropriate permission about Information in our system will only be disclosed to manager in full access and staff with user access. Any unauthorized access is not allowed and if it happens the system detects it and reports to admin. Update of software and configuration and examination will be done in regard to avoid any vulnerability.

2.2.1.6 Safety

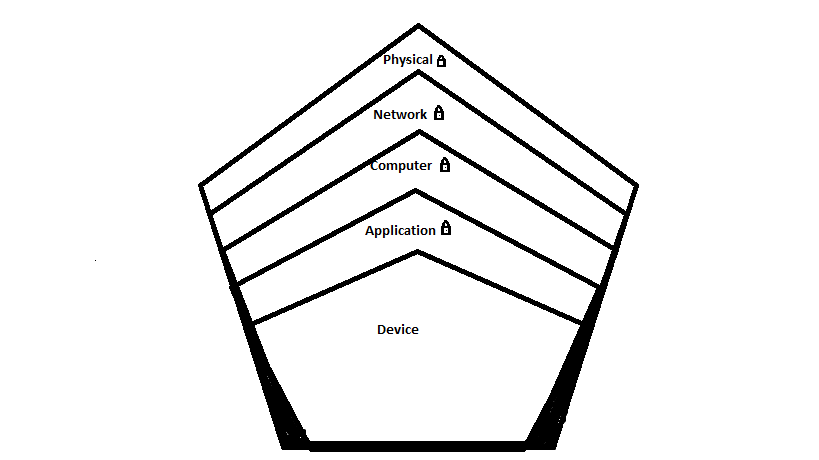
The system must have a host server and a backup server to avoid critical issue and data loss. The system will have risk management system which will analysis hazard, and risk reduction by busing hazard avoidance, hazard detection and removal features. Basic safety features such as incorrect login credential for 3 times will be ignored and then if repented, account will be locked for 10 minutes until they can login in again, as it becomes medium level threat (Spacey, 2017). The system will follow all company policy to minimize possible human and/or environmental catastrophe. The system layered security model is shown below.

Figure 1 system Security Layered model

## 

## Sitemap

图示

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## Planned System Modelling

### Context modeling

We have illustrated the operational context and divided into three subsystems, Roster management, Pay management and Data Storage. It shows what lays outside our project system boundaries.

图示

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Figure : System Context model for the ROSTER Management system

## Process Perspective

This diagram shows how our project being developed performs with its border business .When the employee logs in, the availability working hours are provided, the manager provides the request, and if it matches, the approve for work is provided to complete the system interaction.

* + 1. 图示

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Figure : System perspective for the system Interaction Models

## Use Case Diagram

Here we have represented a discreet task between actors interaction with the system. This diagram showing the needs and actions of key stakeholders for the Roster management system. Now we plan three login identities, employee, trainee, manager.

图示

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Figure : Use case diagram for Employee, Manager and trainee.

## 

## Sequence diagram

The sequence diagram shows employee interactions with objects in chronological order by the Roster management system.

It is divided into several actions: login, sign-up, and interaction with manager.

图示

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Figure : Login Sequence diagram for Employee

图示

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Figure : Sign-up Sequence diagram for Employee

图示

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Figure Sequence diagram for roster management

### Class Diagram

UML Classes Diagram shows the relationship between Trainee, employee and Roster Manager when operating Training

图示

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Figure UML Classes Diagram for ROSTER management system.

It is a link that indicates relationship between classes. This diagram represents the name, attributes and Operations of the Classes.

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Figure Class Associations for ROSTER Management system

## Behavioral Module

### Data Modelling

Data modelling represents the sequence of actions attracted In Input and Output process. The Data modeling diagram represents the components and deployment of the system and is a static view of the analysis and design application.

图示

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Figure Data modeling diagram for roster management

### Event-driven Modelling

The Event-driven Behavioral Module diagram represents the activity flow modeling of the roster management system. Introduces the flow of the system, describes parallelism, branching, and concurrent flow of the roster management system.

图示

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Figure Event-driven Behavioral Module diagram

## 

## Object Oriented Design

### System Context

An association diagram of subsystems represented by objects in the roster management system.

* 1. 图示

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Figure system context object oriented design.

### Use Case

The purpose of the Use Case diagram is to describe the dynamic aspects of the roster management system.

We used four actors, Availability management, Role management, Training management and User management. Below are actors and their use cases

图示

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Figure Availability management use case Diagram for ROSTER MANAGEMENT SYSTEM

图示

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Figure Role management use case Diagram for ROSTER MANAGEMENT SYSTEM.

图示

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Figure Training management use case Diagram for ROSTER MANAGEMENT SYSTEM

图示

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Figure User management use case Diagram for ROSTER MANAGEMENT SYSTEM

## 

## project management implementation approach

WBS (work breakdown structure) will be used to assign tasks and schedule time in order to allocate time more efficiently and guarantee that activities are completed on time. A WBS (Work Breakdown Structure) is a graphic representation of a project's numerous tiers. It's a method of better visualising the targeted outcomes.

The work breakdown structure may be produced using a mix of workflow management software and specialised approaches since it is visible. Timelines, Kanban boards, and calendars are just a few of the tools available.

### WBS

First divide the items into three levels and categorize them:

*WBS name: ROSTER Management System*

*Description: Use the new system to properly manage employees, train the management organization to reach their full potential, as the focus will be more on material task completion, rather than managing by managers requiring a specific number of employees in this system to work during individual periods extra time. Employees can accept or reject polls during work hours based on their shift manager, and employees can provide their time or hours in advance. Employees can also practice their upcoming tasks with the help of training materials provided in the system.*

*Completion date: 30/6/22*

*Budget: $85440*

*Level 1:*

1. *website design*

*Level 2:*

1. *Employee page Design*
2. *Login/Register page Design*
3. *Training Page Design*
4. *Poster Manager Page Design*
5. *Trainee Page Design*
6. DB Build
7. *Server Build*

*Level 3:*

1. *Employee page Design*

*UI Design*

*Function Coding*

*DB connection*

*Testing*

1. *Login/Register page Design*

*UI Design*

*Function Coding*

*DB connection*

*Testing*

1. *Training Page Design*

*UI Design*

*Function Coding*

*DB connection*

*Testing*

1. *Poster Manager Page Design*

*UI Design*

*Function Coding*

*DB connection*

*Testing*

1. *Trainee Page Design*

*UI Design*

*Function Coding*

*DB connection*

*Testing*

1. DB Build

Entity relationship Diagram

Data Structure

DB Testing

1. *Server Build*

*Domain hair*

*Function call and back*

*Server Setup*

Based on staff changes and project changes, I recalculated the project's budget, as shown in the image below:

The following is the WBS dictionary

The main purpose of the WBS dictionary is to explain each task in more detail. This is because the visual nature of a good WBS does not allow for a detailed explanation. Creating a dictionary helps team members find various tasks easily.

The cost of this project is shown in the table below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Price | Time | Amount | Total |
| Developer | $30/h | 8hour\*5days\*12week | 4 | $57600 |
| Project manager | $45/h | 8hour\*5days\*12week | 1 | $21600 |
| Firebase | $50 | 12 month | 1 | $600 |
| iphone | $1800 |  | 1 | $1800 |
| Android phone | $1200 |  | 1 | $1200 |
| tablet | $600 |  | 1 | $600 |
| Domain | $120 | 12 month | 1 | $1440 |
| GCP(google cloud platform)  Firebase | $50 | 12 month | 1 | $600 |
| Total |  |  |  | $85,440 |

Here is the Gantt Chat for this project

*图形用户界面

低可信度描述已自动生成*

*图形用户界面

中度可信度描述已自动生成*

*表格

中度可信度描述已自动生成*

## Communication Plan

Due to the impact of the epidemic, this project will adopt the mode of remote communication.

The following tools will be used as a communication medium:

1. Miro

There are online movies, mind maps, sticky notes, project management diagrams, and online papers, among other things, as shown in a snapshot of the Miro official website homepage. It's tough to pin down exactly what it is. And they claim that it is a limitless online collaborative drawing board that anybody can utilise to communicate and work online, whether they are a product manager, marketing, designer, or developer.

Miro gives a big artboard, which, while not limitless in size, is more than adequate for expressing thoughts or organising objects. Miro is typically utilised while a concept is still in its infancy. We may not be able to come up with good ideas if we do not have a large, open environment in which to think.

Miro also supports a variety of element rendering techniques. Not to mention the shapes, texts, lines, sticky notes, and pencils that come pre-installed. It also allows you to create mind maps, Kanban boards, and diagrams, as well as insert iframes and intercept web pages. If that isn't enough, you may also install applications to connect to Google Docs, Dropbox, and other services.

2. Monday

Monday.com is so visually appealing, simple, and intuitive that no training is required. Create your perfect workflow in minutes or pick from 200+ pre-made templates based on how real teams use Monday.com. No training is necessary to utilise the simple, visual interface, which allows any team member to hop right in and get started. Used to assign project tasks and track work progress.

3. WhatsApp

An online communication tool for daily chatting and sharing ideas.

4. Github

Synchronize development progress, store source files, and manage code reviews for each developer. Source code backup, etc. Open source free online platform.

## Writing to the audience

Roaster management helps manager to organize and manage staff roasters. In one look, everyone can see who is working for the day and week, who are not on the list for next day, approve day off request, post vacant shift and so much more. As this website is highly dedicated to casual IT staff, they can work with their own choice, if they want to work, they will pick the shift, otherwise they can reject the shift request. In the current scenario, manager is calling every casual staff if they can work next week which is lengthy process and everyone may not be able to receive call all the time and it is not possible to call all the staff every time. After completion of this project, all vacant shift, staff availability is going to be in the system so calling system will be removed slowly. However, they still might have to call for the suitable replacement if there is cancellation of shift in the last moment, not enough people for the project but it won’t be time consuming like the previous system. Analyze, reporting and metrics are important to understand what is doing well and which part need improvement. This website aimed to provide staff with related insight that can be used to make decision, regarding workforce planning, skill management and benefits. It allows demand forecasting and staff are able look at previous data and can assume for future demand and upcoming project that could affect the company. Team can plan and meet the customer requirement correctly and manage shift according to demand.

**This website will provide following feature to the manager and the staff**

* Manage roaster by location and job title,
* Planning table highlights unavailability or shift goes beyond limitation (i.e., if shift exceed the time),
* Task and training are uploaded on the website so staff can take a look about previous task before starting the new shift,
* Can create roaster for week or month based on staff availability in just few moments,
* Provide all the information about the shift and task like notes, place, attachment, time,
* Staff can access their roaster from phone and will be updated in any change as website send automatic reminders,

## Conclusion

The website that is going to be developed for the roaster management meet the basic requirements while it come to task performance. Employees database with their availability, flexibility on picking shift, shift exchange with other colleague, record of staff clock in and clock out, approving leave and tracking vacation time. It delivers accurate time and detailed reports, gives real time communication, notification and reminder top of while there is new update and change. Abacus company can save time and effort that they are currently spending on timesheet and use that time for other office work and documentation. This staff management strategy is more effective and can be easily integrated to the other system like benefit administration and reporting capabilities. It helps to minimize mistake and improve and increase work productivity. Project is design specially for casual staff so can have good user experience. User can use their smartphone for checking timesheet which saves time. As everything’s are included in website so there is no need of printing any document for leave approval, timesheet, training which saves costs and that is benefit for the company. It also helps to create best working environment, finish project within time and bring change in system.

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