UNIVERSITY of GUYANA

Department of Computer Science, University of Guyana

CSE2101 - Software Engineering I

Submission 1: Project Plan

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Introduction

The application, processing, and issuing of a Certificate of Character in its current state is inefficient since it is paper-based. As it currently stands, candidates must visit either of the two available Criminal Records Offices in Georgetown or Linden; given these limited locations, applicants are often inconvenienced by lengthy lines. The records system, being paper-based, generally makes the task tedious to complete and there is a high risk of losing records due to disasters such as fires and floods. Our proposed Management Information System aims to tackle these inconveniences and risks that were brought along with the current system.

The components of the system will include an online web interface and mobile application that citizens can access from anywhere as such applicants will no longer have to visit a Criminal Records Office unless necessary when seeking a Certificate of Character. This would be beneficial for applicants from all administrative regions across Guyana.

A case management solution will be developed to access the database holding the applicant's information. This is expected to enhance the decision-making process and ease credible criminal record checks on applicants without having to search through endless paperwork. The case management solution will integrate digital fingerprint scanners for capturing the applicant's fingerprints, replacing the paper and ink process currently used.

The constraints

- This project will heavily depend on updated case information from the Courts around Guyana. As such any delay in collecting and updating the system with all convicted offenders for the past year will cause a delay in completing the project. More resources may be required to have a more hands-on deck in the inputting and verifying of data.

- There is a need for a digital Information system to manage the criminal matters of the Guyana Defence Force. With such a system, data can be easily shared with the Criminal Record Office. The close relationship between this need and our project creates an avenue for scope creep. Stakeholders may add one or two more requirements to the project which can cause a delay in its completion.
- This project proves to be costly, and the stakeholders may refuse to spend the amount needed for the completion of the project

Budget Estimate

Project Expenditures	Rate	Quantity	Total
Software costs			
Software development and integrations	**$3,400,000**		**$3,400,000**
Operating systems and Application licenses	**$ 820,000**		**$ 820,000**
Subtotal	**$ 4,220,000**		**$ 4,220,000**
Hardware costs			
Servers	**$600,000**	**3**	**$ 1,800,000**
Workstations	**$152,000**	**12**	**$ 1,824,000**
Printers	**$140,000**	**12**	**$ 1,680,000**
Digital Fingerprint Scanners	**$190,000**	**36**	**$ 6,840,000**
Uninterruptible Power supplies	**$16,000**	**12**	**$ 192,000**
Subtotal	**$1,098,000**	**75**	**$12,336,000**
Labour costs			
Project manager	**$182,000**	**1**	**$182,000**
Lead Systems Analyst	**$303,000**	**1**	**$303,000**
Chief Software Architect	**$200,000**	**1**	**$200,000**
Lead Software Developer	**$230,000**	**1**	**$230,000**

Lead UX/UI Designer	**$177,000**	**1**	**$177,000**
Quality Assurance (QA) Manager	**$140,000**	**1**	**$140,000**
Subtotal	**$1,232,000**	**6**	**$1,232,000**
Support costs			
Client manager	**$177,000**	**1**	**$177,000**
IS support	**$154,000**	**1**	**$154,000**
DB analyst	**$163.000**	**1**	**$163.000**
Networking support	**$130,000**	**1**	**$130,000**
Subtotal	**$624,000**	**4**	**$624,000**
Training			
Technical training for users	**$500,000**		**$500,000**
Subtotal	**$500,000**		**$500,000**
Ongoing costs			
Annual vendor maintenance/service charges	**$200,000**		**$200,000**
Total project cost	**$7,874,000**		**$19,112,000**

The proposed system will allow persons from all the administrative regions in Guyana to apply for a certificate of character in the region they reside. The expected time for the issuance of the certificate will also be reduce from 5-7 working days to 2-3 working days. This will be possible since the system will be search criminal records instead of doing it manually allowing more certificates to be processed in less time. As such the budgeted cost of $19,112,000 is a small price to pay for benefit of computerizing the issuance of certificates of character.

Project organization

The project organization considers that the project takes a planned approach/waterfall model of development, as such a team that has a hierarchical structure and works according to well-defined processes is needed. (Sergeev, A. (2016, May 24). The employees who will be doing these tasks are needed for any information management system. They will like their work to be done effectively and efficiently, with the Guyana Police force not only needing these persons to do this job but also to help their whole management system. The project will have functional team members, who will be introduced to the project at the project phases outlined below:

1. Requirements phase
2. System design phase
3. Implementation phase
4. Testing phase
5. Deployment and review phase

All members of the development team will have a responsibility, along with supplying input as required during the project phases, to ensure the project meets expectations and is delivered within budget and time constraints. The members of the development team will lead and manage more human resources that fall under their functional areas. This system will not only improve the overall rate at which work will be done but the accuracy with which the information/data will be presented, the processing of that data, and the relevance in which data will be presented. Giving them a fighting chance must improve the overall workflow, making things smoother and more accessible, and more correct than before.

The development team for this project initiative is compromised as follows:

QTY	Role and Responsibility	Reports To
1	**Project manager** – The Guyana Police force will contract the services of a systems analyst who will serve as the project manager. This human resource is expected to have a diverse set of skills— management, leadership, technical, conflict management, and customer relationship—and will handle initiating, planning, executing, and closing the project. Key actions will include articulating a vision of success, tying everyone involved in the project to that goal, and supplying the tools and techniques needed.	**Guyana Police Force – Senior Management**
1	**Lead Systems Architect:** The Systems architect for this project will define, design, and document the overall architecture of the proposed information system. Identifying the data storage needs, the hardware and software underlying infrastructure and networks, system security, and disaster recovery among other aspects that relate to the components of the proposed information system.	**Project manager**
1	**Chief Software architect:** A software architect will be contracted and will manage high-level design choices related to	**Project manager**

	overall system structure and behaviour, such as tools, software coding standards, or platforms to be used.	
1	**Lead Software Developer:** These are human resources that will be contracted to code, integrate, assess, and maintain the software aspects of the proposed information system	**Project manager**
1	**Lead UX/UI Designer:** A UX/UI designer will be contracted to ensure that the information system's overall use and design are done according to best practices and offer the best experiences to end users.	**Project manager**
1	**Quality Assurance (QA) Manager:** Responsible for ensuring the information system meets its requirements and quality standards.	**Project manager**

Risk Analysis

Risk Description	Type of Risk	Probability	Effects	Risk Reduction Strategy
The biometric finger scan software cost is underestimated	Financial	Moderate	Serious	A thorough feasibility study and cost analysis of the project and its critical components will be conducted
The system generates incorrect information on an applicant's criminal history	Functional	Moderate	Serious	Strict data type requirements to validate fields of data entry to mitigate mistakes.
Trained staff not available at all Regional Police Stations for processing Certificates of Character	Operational	High	Tolerable	Before the system is launched, training will be conducted, and the solution will be implemented in stages
The generated confidential reports are accessible to unauthorized users	Reputational	Low	Catastrophic	Usernames and passwords are issued within a domain environment to minimize unauthorized access.
Insufficient fingerprint scanners at the regional Police Stations	Operational	Moderate	Serious	Cost-effective solutions like acquiring fingerprint scanner apps that can be incorporated into smartphones.

The biometric finger scanner fails to detect fingerprints	Functional	Low	Serious	Each regional Police office would be equipped with a backup finger scanner.
Reluctancy from applicants to use the system	Operational	Moderate	Serious	User-friendly interface designed to save time and promote transparency in the process.
The financial requirements for the system surpass the estimated cost	Financial	Moderate	Catastrophic	Thorough budget planning with multiple vendors' quotes being examined during the planning phase
Software development timeline being delayed	Operational	Moderate	Tolerable	A clear project plan and schedule geared to meeting deadlines and completing tasks on time.
The system not being able to process a large number of applications as expected	Functional	Moderate	Tolerable	Performance testing weekly during development and deployment

Hardware and Software Requirements

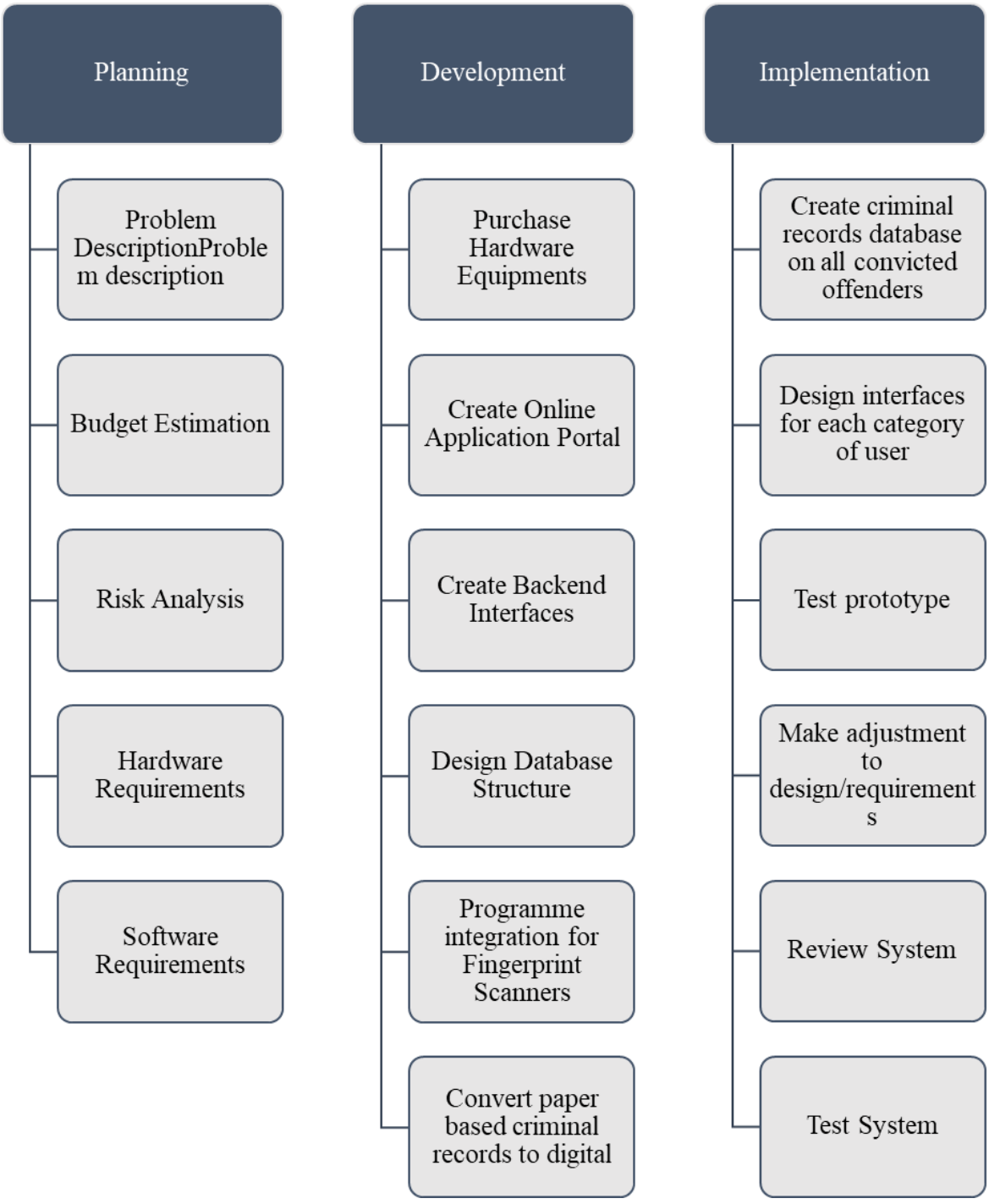
The Hardware Requirements are:

Name	Description	Details
Uninterrupted Power Supply	This will be used encase of emergencies, by allowing the Guyana Police Force computer systems to run during power interruptions.	Power backup
Servers	Connect computers to the Police's Local Area Network and back up data locally.	Network storage server
Fingerprint scanners	The information system will capture applicants' fingerprints digitally. Law enforcement-grade fingerprint scanners will be part of the information system to achieve this requirement.	Thirty-six
Central Processing Unit	This will be used to interpret the commands during the processing of the Certificate of Characters.	Pentium IV and supra
Random Access Memory (RAM)	This will be used as the short-term memory for the computer systems that the Criminal Records office will be using to process Certificates.	4GB
Hard drive	A hard drive would be used to permanently store all data so that it could be easily recovered in the event of any catastrophe.	500GB
Network	Used to share files and resources among Police stations in Guyana.	Local Area Network
Printers	The management system will be producing hard copies of the Certificate of Character. Which would be mailed to applicants.	Laser Printers

The Software requirements are:

1) The software must supply a secure interface that allows citizens to apply for a character of reference using a computer or mobile device.
2) The software system must provide a secure interface that allows staff to access, and review submitted applications.
3) The software system should be able to analyze an application and decide if the applicant has an earlier criminal record by querying a database of criminal records.
4) The software system should help with the digital storage of an applicant's fingerprints
5) The software system should help the tracking the payment made for a Certificate of Character by an applicant

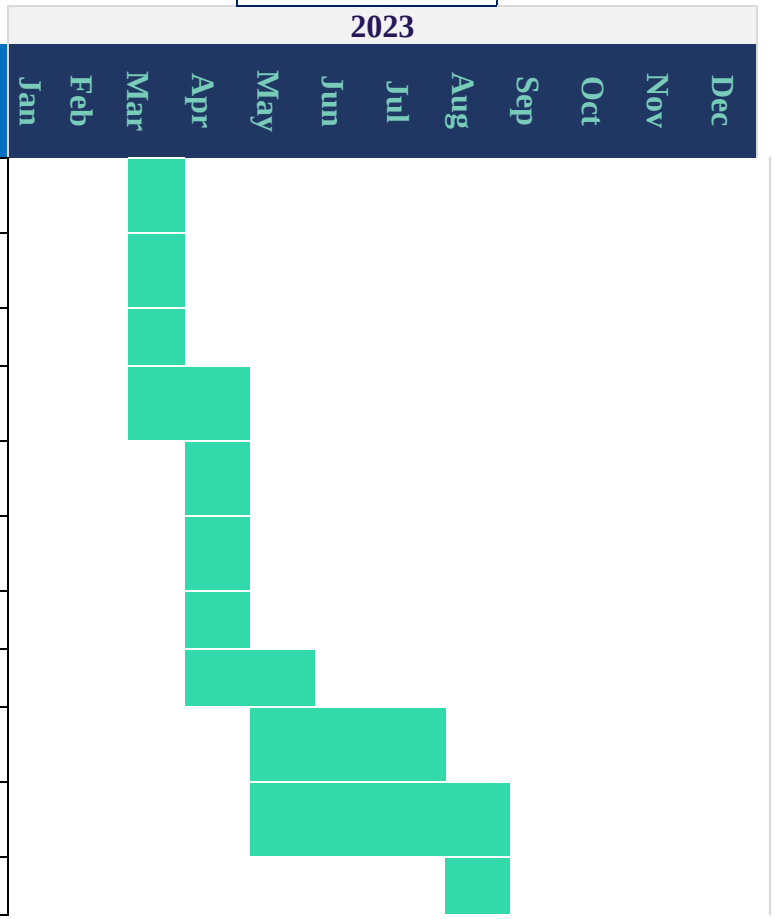
Work breakdown



Project schedule

Project start date: 06-Mar-23

TASK NAME	Project Lead - Assigned	START DATE	END DATE	Days
Hold Project kick-off meeting	Project Manager	06-Mar-23	06-Mar-23	0
Prepare Project Plan	Project Manager	06-Mar-23	10-Mar-23	4
Establish project team	Project Manager	10-Mar	24-Mar	14
Document project/business requirements	Lead Systems Architect	24-Mar	7-Apr	14
Define system requirements	Lead Systems Architect	7-Apr	12-Apr	5
Review system requirements	Lead Systems Architect	12-Apr	15-Apr	3
Procure Hardware	Project Manager	15-Apr	21-Apr	6
Install Hardware	Project Manager	21-Apr	2-May	11
Code and Develop Custom Software components	Chief Software architect	2-May	31-Jul	90
Conduct Testing	Quality Assurance Manager	31-May	7-Aug	68
Deployment and review	Project Manager	7-Aug	31-Aug	24



E-Police Clearance Management System

Guyana Police Force - IT Department

Project Duration : 183 Days

Project Start:	Mon, 3/6/2023
Today:	Wed, 3/1/2023
Display Week:	1

TASK	ASSIGNED TO	PROGRESS	START	END
Requirements phase - 30 Days				
Hold Project kick-off meeting	Project Manager		6-Mar	6-Mar
Prepare Project Plan	Project Manager		6-Mar	10-Mar
Establish project team	Project Manager		10-Mar	24-Mar
System design phase - 22 Days				
Document project / business requirement	Lead Systems Architect		24-Mar	7-Apr
Define system requirements	Lead Systems Architect		7-Apr	12-Apr
Review system requirements	Lead Systems Architect		12-Apr	15-Apr
Implementation phase - 107 Days				
Procure Hardware	Project Manager		15-Apr	21-Apr
Install Hardware	Project Manager		21-Apr	2-May
Code and Develop Custom Software components	Chief Software architect		2-May	31-Jul
Testing phase - 68 Days	Quality Assurance Manager		31-May	7-Aug
Deployment and review phase - 24 Daty	Project Manager		7-Aug	31-Aug

References

Sergeev, A. (2016, May 24). *An Essential Guide to Creating and Managing Waterfall Teams*. Hygger. Retrieved October 25, 2022, from https://hygger.io/blog/an-essential-guide-to-creating-and-managing-waterfall-teams/

Group Participation

Section	Participation
Introduction	Tyrese Deleon Oumotia Morris Khushal Lam
Project Organization	Ronaicia Stephens Kelvin Daly
Risk Analysis	Shauna Lindo David Constantine
Hardware and Software Requirements	Everyone
Work Breakdown	Shauna Lindo Kelvin Daly Oumotia Morris Ronaicia Stephens Tyrese Deleon
Project Schedule	Kelvin Daly