Project Report

Product Name	Problem Manage a Server Outage Scenario & an Issue & Change Request Management System
Qualification Name (ITSF)	NICF-Advanced Certificate in Infocomm Technology (Software & Applications)
Product Name	NICF-Capstone Project using Java
Module Name (ITSF)	NICF-Capstone Project using Java

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Project title	Problem Manage a Server Outage Scenario & an Issue & Change Request Management System

Learner declaration
I certify that the work submitted for this assignment is my own and research sources are fully acknowledged. Student signature: Date:

Content

1 Project Background

Over the years, ABC Job Center has helped millions of people find jobs and has equipped hundreds of thousands of employers with the talent they need.

As an industry leader, ABC Job Center works with companies big and small, providing cutting-edge solutions for everything from recruiting to employment screening and human capital management.

2 Project Objectives

ABC Jobs Pte Ltd wants to develop a community portal for Software Developers, similar to Linkedln.com.

Users will be able to register in the portal using the Registration Page. Users of the portal can search for other users using various parameters such as First Name, Last Name, Company Name, City & Country. Users will be able to view the Public Profile of users after searching them. The portal allows users to login, request for forgotten password and update their profile information.

The project scope is to define the problem management activities to resolve outage problems. The purpose of problem management is to reduce the likelihood and impact of incidents by identifying actual and potential causes of incidents, and managing workarounds and known errors.

3 Project Requirement Specification

3.1 Project Requirement

The requirement of the project is to design a Community Portal Similar to Linkedin.com. Users will be able to register in the portal using the Registration Page. Users of the portal can search for other users using various parameters such as First Name, Last Name, Company Name, City & Country. Users will be able to view the Public Profile of users after searching them. The portal allows users to login, request for forgotten password and update their profile information

The overview of the project is as below.

There are 2 types of users in this Community portal. They are

1. Software Programmer
2. Administrator

Software Programmer should be able to perform following functions in the portal

1. Allow the programmers to register in the portal, show a thank you page & send a registration confirmation email.
2. Search & Find Other Programmers after login and view their profile.
3. Provide Login Page
4. Provide password retrieval functionality.
5. Update their Profile after logging in.
6. Send Messages to Each Other on the Portal
7. Create Threads & Post Replies to a Thread
8. Post Job Opportunities in the Portal

Administrator should be able to perform following functions in the portal

1. Administer user data.
2. Send bulk email inviting programmers to register on the community portal

In the project, the task is to resolve the problems identified during the testing.

3.2 What is problem management?

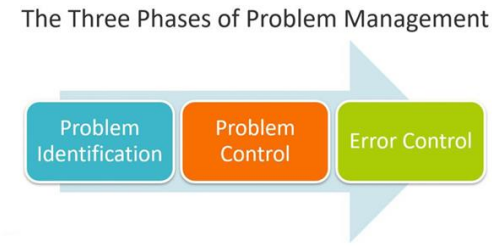
The purpose of problem management is to reduce the likelihood and impact of incidents by identifying actual and potential causes of incidents, and managing workarounds and known errors.

Problems are related to incidents, but it is important to differentiate them in the way they are managed:

- Incidents have an impact on users or business processes, and must be resolved so that normal business activity can take place.
- Problems are the causes of incidents therefore they require investigation and analysis to identify the causes, develop workarounds, and recommend longer-term resolution. This reduces the number and impact of future incidents.

3.3 3 phases of problem management

Problem management involves three distinct phases:



3.3.1 Problem Identification

Problem identification activities identify and log problems by:

- Performing trend analysis of incident records.
- Detecting duplicate and recurring issues.
- During major incident management, identifying a risk that an incident could recur.
- Analyzing information received from suppliers and partners.
- Analyzing information received from internal software developers, test teams, and project teams.

3.3.2 Problem Control

Problem control activities include problem analysis and documenting workarounds and known errors. Just like incidents, problems will be prioritized based on the risk they pose in terms of probability and impact to services. Focus should be given to problems that have highest risk to services and service management.

When analysing incidents, it is important to remember that they may have interrelated causes, which may have complex relationships. Therefore, problem analysis should have a holistic approach considering all contributory causes such as those that caused the incident to happen, made the incident worse, or even prolonged the incident.

When a problem cannot be resolved quickly, it is often useful to find and document a workaround for future incidents, based on an understanding of the problem. A workaround is defined as a solution that reduces or eliminates the impact or probability of an incident or problem for which a full resolution is not yet available. An example of a workaround could be restarting services in an application, or failover to secondary equipment. Workarounds are documented in problem records, and this can be done at any stage without necessarily having to wait for analysis to be complete. However, if a workaround has been documented early in problem control, then this should be reviewed and improved after problem analysis has been completed.

An effective incident workaround can become a permanent way of dealing with some problems, where resolution of the problem is not viable or cost-effective. If this is the case, then the problem remains in the known error status, and the documented workaround is applied when related incidents occur. Every documented workaround should include a clear definition of the symptoms and context to which it applies. Workarounds may be automated for greater efficiency and faster application.

3.3.3 Error Control

Error control activities manage known errors, and may enable the identification of potential permanent solutions. Where a permanent solution requires change control, this has to be analysed from the perspective of cost, risk and benefits.

Error control also regularly re-assesses the status of known errors that have not been resolved, taking account of the overall impact on customers and/or service availability, and the cost of permanent resolutions, and effectiveness of workarounds. The effectiveness of workarounds should be evaluated each time a workaround is used, as the workaround may be improved based on the assessment.

3.4 Problem management and other practices

Incident Management	Activities from these two practices are closely related and may complement each other (e.g. identifying the causes of an incident is a problem management activity that may lead to incident resolution), but they may also conflict (e.g. investigating the cause of an incident may delay actions needed to restore service).
Risk Management	Problem management activities aim to identify, assess, and control risks in any of the four dimensions of service management. Therefore, it may be useful to adopt risk management tools and techniques.
Change Enablement	Problem management typically initiates resolution via change control and participates in the post-implementation review. However, approval and implementation is outside the scope of problem management.
Knowledge Management	Output from the problem management includes information and documentation concerning workarounds and known errors. Also, problem management may utilize information in a knowledge management system to investigate, diagnose, and resolve problems.
Continual Improvement	Problem management activities can identify improvement opportunities in all four dimensions of service management. Solutions to problems may be documented in a continual improvement register or added to a product backlog.

3.5 People aspects of problem management

Many problem management activities rely on the knowledge and experience of staff, rather than on detailed, documented procedures. Skills and capabilities in problem management include the ability to understand complex systems, and to think about how different failures might have occurred. Developing this combination of analytical and creative ability requires mentoring and time, as well as suitable training of techniques such as Cynefin, Kepner and Tregoe, 5-Whys, Ishikawa diagrams and Pareto analysis among others.

3.6 Problem management in the Service Value Chain

As problem management deals with errors in the operational environment, it is involved mainly in the improve and deliver and support value chain activities of the service value chain as shown below:

Engage	Customers may wish to be involved in problem prioritization, and the status and plans for managing problems should be communicated.
Design and Transition	Problem management provides information that helps to improve testing and knowledge transfer.
Obtain/Build	Product defects may be identified by problem management and be managed during this activity.
Deliver and Support	Problem management makes a significant contribution by preventing incident repetition and supporting timely incident resolution.
Improve	Effective problem management provides the understanding needed to reduce the number of incidents and the impact of incidents that can't be prevented.

4 Task 1

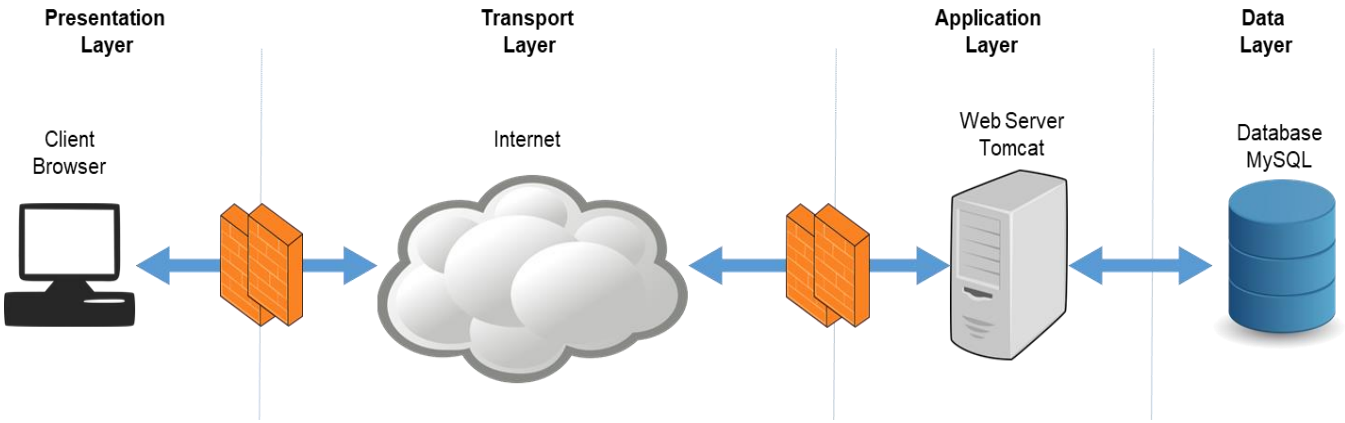
Task Statement:

1. Write a brief requirement specification for the Community Portal.
2. Include it as part of the Project Report

Solution:

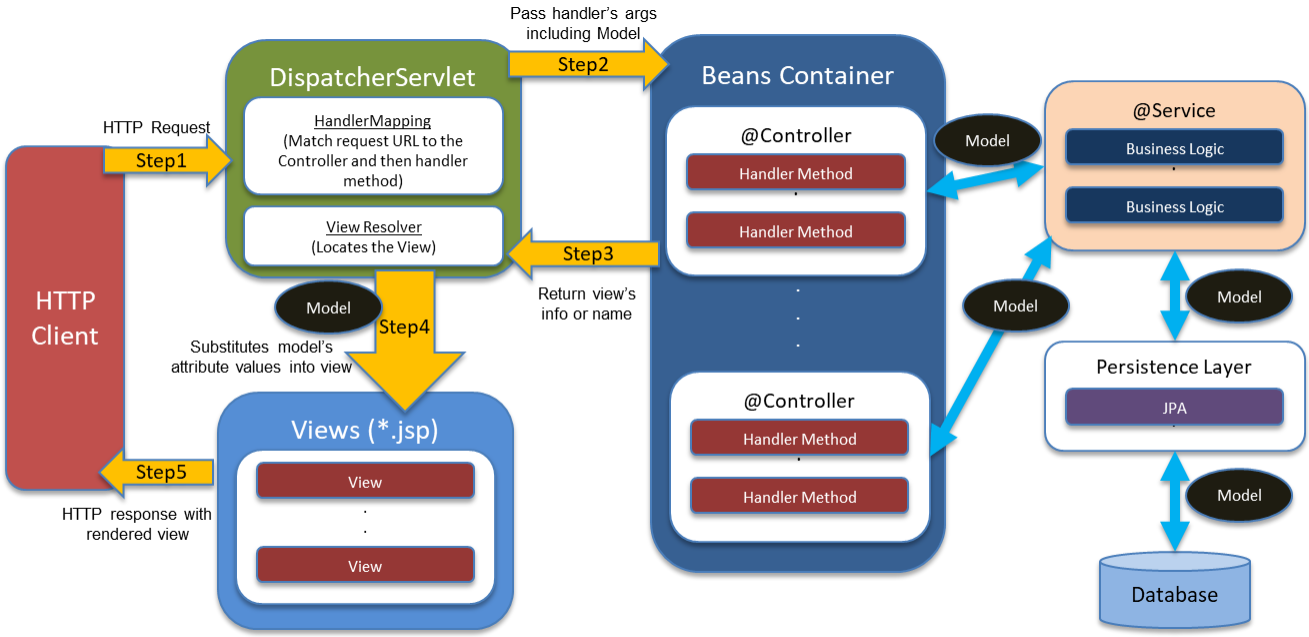
4.1 Architecture of the System

4.1.1 System Architecture



The user will use a browser to connect to the ABC Jobs Pte Ltd Community Portal via the internet. The Community Portal will be hosted in a web server with a database connected.

4.1.2 Application Architecture



The application architecture is based on the concept of the Front Controller as in the typical Spring Model View Controller architecture. The DispatcherServlet plays the role of the Front Controller in the architecture.

The request comes in from the HTTP client. The DispatcherServlet will pass the request to the appropriate handler method according to the request mapping. The controller uses the service controllers to perform business logics which interact with the database via the JPA persistence layer. The controller will return the view name to the DispatcherServlet who will return the rendered view via the View Resolver.

4.2 System

Two modules are to be developed in this project. The two modules are

1. Community Portal Module – This is a public module whereby the general public can access.
2. Administrative Module – This is a restricted module whereby only the administrator can access to perform administrative functions.

4.2.1 Community Portal Module

The table shows the pages in the community portal module where the software developers can access.

S/N	Page	Description	Page Type
1	Community Portal Home Page	This is the landing page	
2	Registration Page	New user register through this page	Create
3	Registration Confirmation Page	A confirmation page for successful registration	View
4	Login Page	This page allows registered user to login	View
5	Forget Password Page	This page allows user to request to reset his/her password	Edit
6	Reset Password Confirmation Page	This page shows a message to inform that a reset link has been sent	View

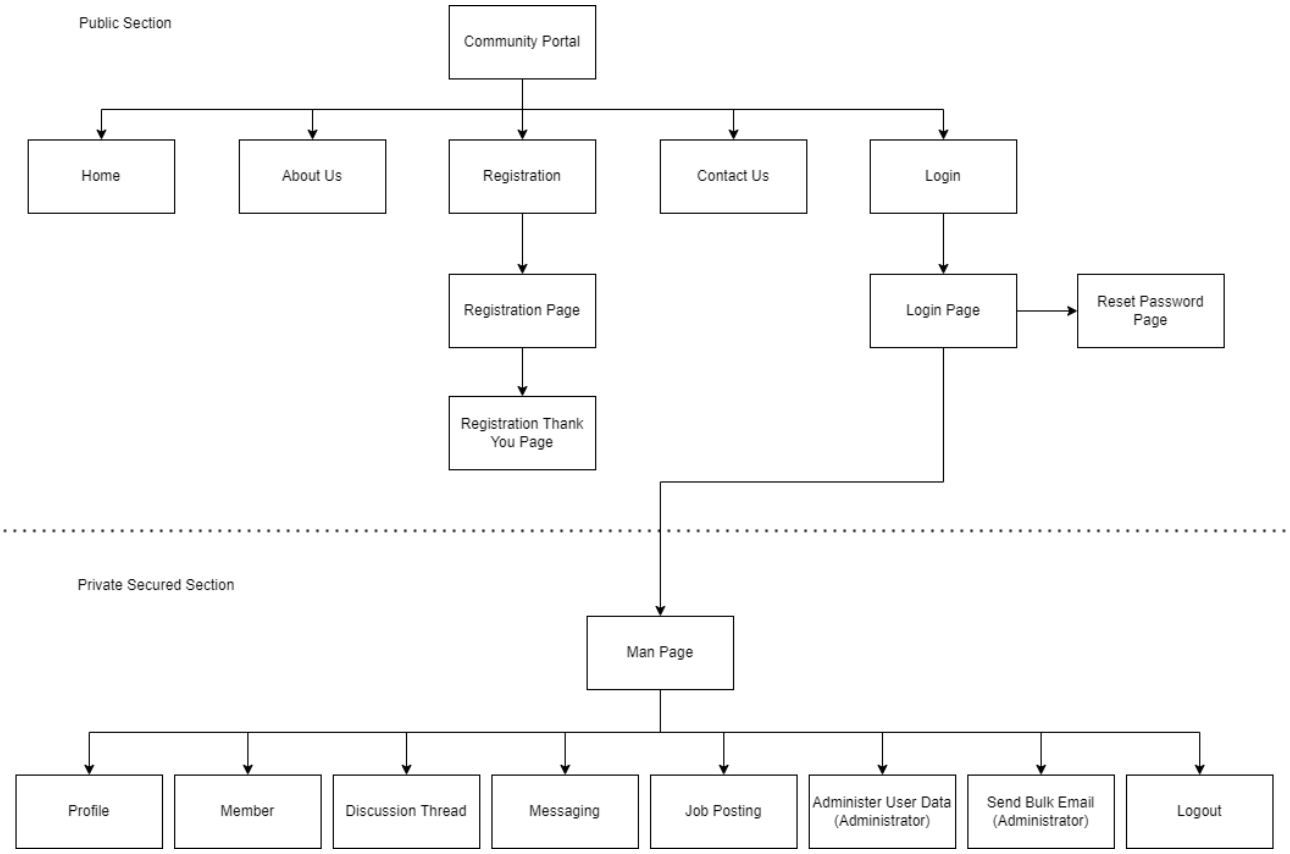
S/N	Page	Description	Page Type
7	Forget Password Change Password Page	This page allows user to change password from the reset link email	Edit
8	Update Profile Page	This page allows user to update his/her profile information	Create for new profile Edit for update profile
9	Search Users Page	A function to allow login user to search for other registered members	View
10	List Search Results	The result for the search for registered members	View
11	Public Profile Page	This page shows the public profile information of a selected registered member	View
12	Send Message	Send a message to another member	Create
13	Read Message	Read a message from a member	View
14	List Message Board (Thread)	List the thread discussions	View
15	Post A Thread	Post a thread discussion topic	Create
16	Read A Thread	Read a thread discussion topic	View
17	Post A Job	Post a new job posting	Create
18	Apply A Job	Apply a job from the list of job postings	Create
19	List Job Opportunities and Responses	Display the list of job postings and the number of applicants	View

4.2.2 Administrative Module

The table shows the pages in the administrative module where the administrator is given access.

S/N	Page	Description	Page Type
1	Administer User Data	Administrative function to list user account information and to request to reset user account password.	View, Create
2	Send Bulk Email	Import a list of emails and use them to send invitations	Create, View

4.2.3 Sitemap



4.3 Technical Environment Requirements

1. Software
    a. MySQL Relational Database System
    b. MySQL Server 8.0.29
    c. MySQL Workbench 8.0.29
    d. phpMyAdmin
    e. JDK 1.8
    f. Apache Tomcat Server 9.0.59
    g. Spring Framework 5.x
    h. Microsoft Word
    i. Microsoft PowerPoint
    j. Programming Languages: HTML, CSS, JavaScript, jQuery, Structured Query Language
2. Hardware
    a. Client (User) – Windows 10 and above. Mac 10.11 and above
    b. Server – Windows Server, MySQL Server
    c. Firewall with port numbers 8080, 3306 accessible

4.4 System Integration Requirements

4.4.1 Database

JDBC Connector 8.0.29 - Connection to MySQL database using JDBC connections.

4.4.2 Mail Server

Javax Mail API - Sending of registration confirmation email, reset password link email and buik invitation emails require a mail server.

4.5 Portability Requirements

4.5.1 Server

The backend server code is written in Java hosted in Tomcat on Windows platform. The code can be ported to Linux platform that provide the same stack of server software.

4.5.2 Client

The front end runs on browser. Therefore, it must be compatible with different browser applications not limited to Chrome, Safari, Edge and Firefox browsers. All devices – Desktop, Tablets or Mobile that can run the browser application will be able to access the system.

4.6 Maintainability Requirements

4.6.1 Database

Backup script to back up the database every 6 hours. Restore script to restore the database in event of failure.

Database maintenance must finish within 3 hours so data is available by 8 a.m. local time after an overnight update.

4.6.2 Application

Application update must finish within 3 hours so system is available by 8 a.m. local time after an overnight update.

4.7 Performance Requirements

System must be able to scale when traffic volume increase with up to 1000 concurrent users. System must be available 24/7 with at least 99.9% uptime.

Each page must load within 3 seconds.

4.8 Security Requirements

4.8.1 Client-Server Communication

For secured communication between the client and server, we will use HTTPS over SSL/TLS.

4.8.2 Spring Security

Spring Security is a framework that focuses on providing both authentication and authorization to Java applications.

In order to access the system, login is required. Spring Security will provide the authentication feature.

The permission to access the application function is restricted by roles – Member or Administrator. This will be handled by Spring authorization feature.

4.8.3 Password

Passwords should not be stored in the clear in the database. Passwords are stored with irreversible cryptographic functions.

Request to reset password are to be time constraint. Reset request that has expired should not proceed with the password change.

4.8.4 Access Control

Below is a table showing the security access for different kind of users

S/N	Page	Visitor	Registered Member	Administrator
1	Community Portal Home Page	✓	✓	✓
2	Registration Page	✓	✓	✓
3	Registration Confirmation Page	✓	✓	✓
4	Login Page	✓	✓	✓
5	Forget Password Page	✓	✓	✓
6	Forget Password Change Password Page	✓	✓	✓
7	Update Profile Page		✓	
8	Search Users Page		✓	
9	List Search Results		✓	
10	Public Profile Page		✓	
11	Send Message		✓	
12	Read Message		✓	
13	List Message Board (Thread)		✓	
14	Post A Thread		✓	
15	Read A Thread		✓	
16	Post A Job		✓	
17	Apply A Job		✓	
18	List Job Opportunities and Responses		✓	

S/N	Page	Visitor	Registered Member	Administrator
19	Administer User Data			✓
20	Send Bulk Email			✓

4.9 Database Requirement Specification

4.9.1 Entities

Community Portal User

The table shows the attributes required to perform the required functionalities of the community portal. The attributes are then used to associate with the required entities.

Functionalities / Pages	Attributes Required	Associated Entities
Registration	email password	User
Registration Confirmation Email	email	User
Login	email password	User
	roleId description	Role
Forget Password Page	email	User
	email expiryTimeStamp	ResetPassword
Forget Password Change Password Page	email password	User
	email expiryTimeStamp	ResetPassword
Update Profile	firstName lastName gender dateOfBirth photo city country	User Profile
	year description institute	Education
	startYear duration position company	Experience

	year description institute	Skill
Search User	search by firstName, lastName, city, country	UserProfile
	search by company	Experience
Public Profile Page	firstName lastName gender dateOfBirth photo city country	UserProfile
	year description institute	Education
	startYear duration position company	Experience
	year description institute	Skill
Send Messages	dateTime senderUserId receiverUserId content replyToMsgId status	Message
Read Messages	dateTime senderUserId receiverUserId content replyToMsgId status	Message
List Message Board (Thread discussion)	dateTime userId content media replyToThreadId status	Thread
Post A Thread	dateTime userId content media replyToThreadId status	Thread
Read A Thread	dateTime userId content media replyToThreadId status	Thread
Post A Job	postUserId jobReferenceNo salary description position type company	Job

	location closingDate	
Apply A Job	jobId salary description position type company location closingDate	Job
	applicationId applicantUserId applicationDate jobId expectedSalary status	JobApplication
List Job Opportunities & Responses	postedUserId jobReferenceNo salary description position type company location closingDate	Job
	applicationId applicantUserId applicationDate jobId expectedSalary status	JobApplication

Community Portal Administrator

The table shows the attributes required to perform the required administrative functionalities of the community portal. The attributes are then used to associate with the required entities.

Functionalities / Pages	**Entity**	**Attributes**
Administer User Data	User	userId email password createdDate emailConfirmed status
	ResetPassword	email expiryTimeStamp
Send Bulk Email	User	email password status

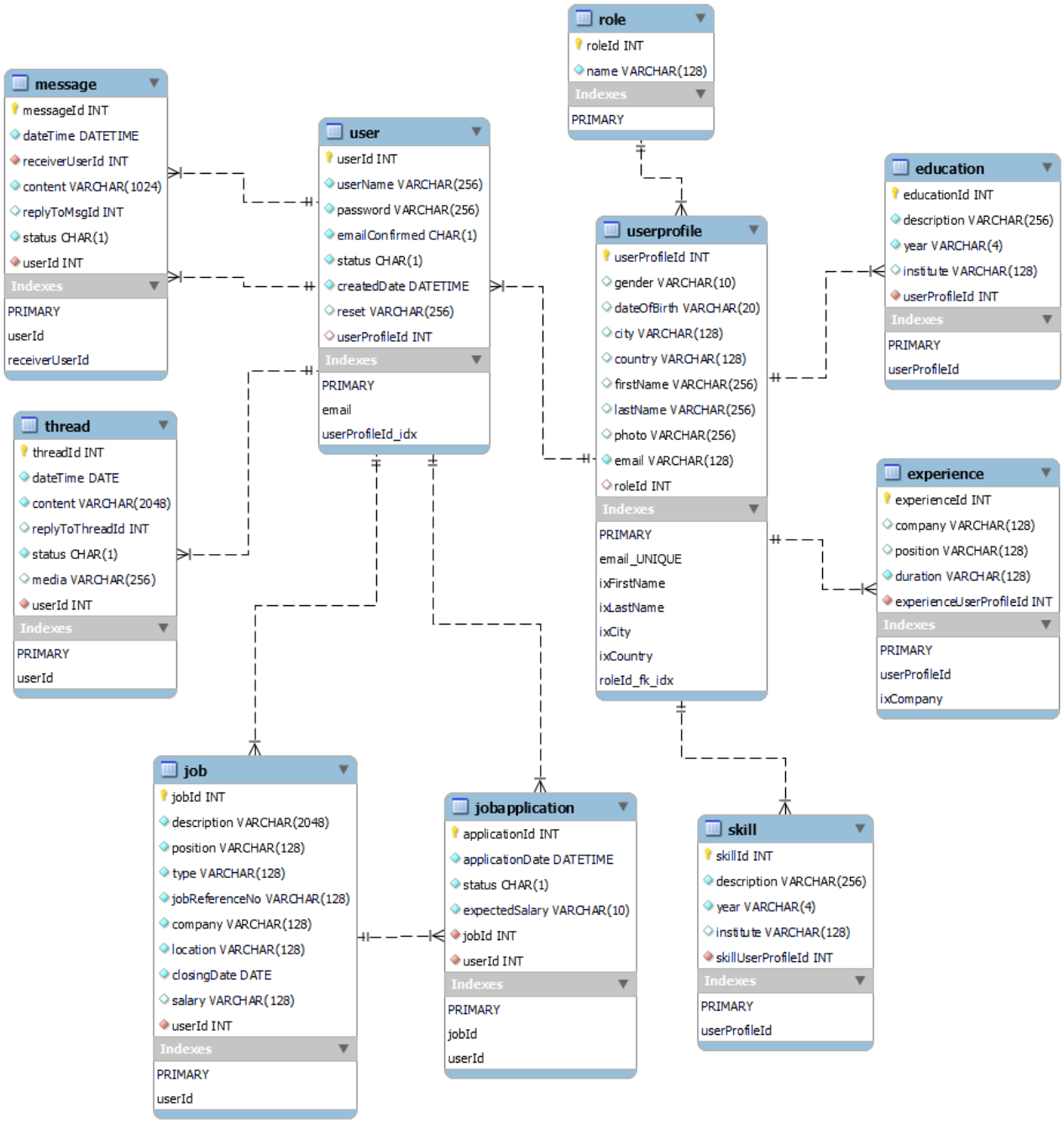
4.9.2 Entities and Attributes

The table shows the required entities and their attributes.

Entities	Attributes	Comments
User	userId – unique identification for user email – email of user password – password of user createdDate – date created emailConfirmed – flag to indicate if user has confirmed his/her email status – status of user account such as active, suspended, etc	User account information
Role	roleId – unique identification for role description – description of role such as member, administrator, etc	User role – member, administrator
ResetPassword	resetId – unique identification for password reset request email – email of user whose password to reset expiryTimeStamp – time stamp of when this request expires	Record to store reset password request
User Profile	userProfileId – unique identification for user profile firstName – first name of user lastName – last name of user gender – gender of user dateOfBirth – date of birth of user photo – photo of the user city – city where the user is located country – country where the user is located	User profile information
Education	educationId – unique identification for education record year – year of achievement description – description of the achieved education institute – education institute where education is achieved	User education record
Experience	experienceId – unique identification for work experience record startYear – start year of the work experience duration – duration of the work experience position – position of the work experience company – company of the work experience	User work experience record
Skill	skillId – unique identification for skill record year – year when the skill was obtained description – description of the skill institute – institute where the skill was obtained	User skill record
Message	messageId – unique identification for the message dateTime – time stamp of the message senderUserId – user Id of the sender receiverUserId – user Id of the receiver content – content of the message replyToMsgId – message Id to reply to status – status of the message	Message detail information
Thread	threadId – unique identification for the thread discussion record dateTime – time stamp of the record userId – user Id who create or reply the thread discussion content – content of the thread discussion media – media content such as an image or video replyToThreadId – thread Id to reply to status – status of the thread	Discussion thread detail information
Job	jobId – unique identification for the job posting record PostedUserId – user Id of the creator of the job posting jobReferenceNo – job reference number salary – salary of the job description – description of the job scope, required skills, etc position – job title type – job type such as contract, permanent, etc company – hiring company location – location of work place closingDate – closing date of the job posting	Job posting record
JobApplication	applicationId – unique identification for the job application record applicantUserId – user Id of the applicant applicationDate – date of application	Record of job application by member

	jobId – job Id of the applied job expectedSalary – expected salary status – status of the job application	

4.9.3 EERD



5 Task 1

Task Statement:

1. Briefly explain principles of problem management with an example across its lifecycle
2. Include it as part of Project Presentation

Solution:

Principles of Problem Management

1. Create a team to own the problem management process

Have a problem committee or team that identifies, prioritises, and assigns problems can effectively reduce business impact

2. Analyse incident trends

Analysing incident trends and reviewing high-impact incidents can help the team to identify problems

3. Establish a well-defined problem management process

To make problem management effective, implement a process that is easy and follows a logical sequence of steps, and complement other process such as incident management, change management.

4. Perform a root cause analysis

When you institute an effective problem management model in your organisation, you will reduce the inflow of multiple tickets for the same incident as well as recurring incidents. To meet this objective, an effective root cause analysis must be done. A root cause is the core of the problem, and removing the root cause ensures that the problem never recurs.

5. Strive towards problem management maturity

A truly mature management model is one that is proactive. Proactive problem management involves identifying and resolving problems before incidents occur. Therefore, it must involve activities like investigation of fragile and vulnerable components of the IT environment, an analysis of a new patch, or an upgrade to prevent incidents due to the patch or upgrade.

There are eight stages in the problem management lifecycle.

1. Problem identification

This is to identify what is the problem such what cannot be performed or what is the outage.

2. Problem logging

This is to record the event of the problem such as when and how it happens.

3. Problem categorization

This is to categorize the problem into classifications such as critical or major or minor problem.

4. Problem prioritization

This is to prioritize the severity of the problem so that appropriate level of remedy actions or resources can be assigned to follow up.

5. Problem investigation and diagnosis

This is to diagnose the problem in order to determine the root cause.

6. Creating a known error record

Once a problem has been diagnosed and a workaround identified, the problem is recorded as a known error.

7. Problem resolution and closure

Resolution resolves the underlying cause of a set of incidents and prevents those incidents from recurring. Some resolutions require change management.

8. Major problem review

This is to evaluates the problem documentation and identifies what happened and why. There are lessons to learn such as process bottlenecks, what went wrong, and what helped should be discussed. The purpose to improve for future projects.

6 Task 2

Task Statement:

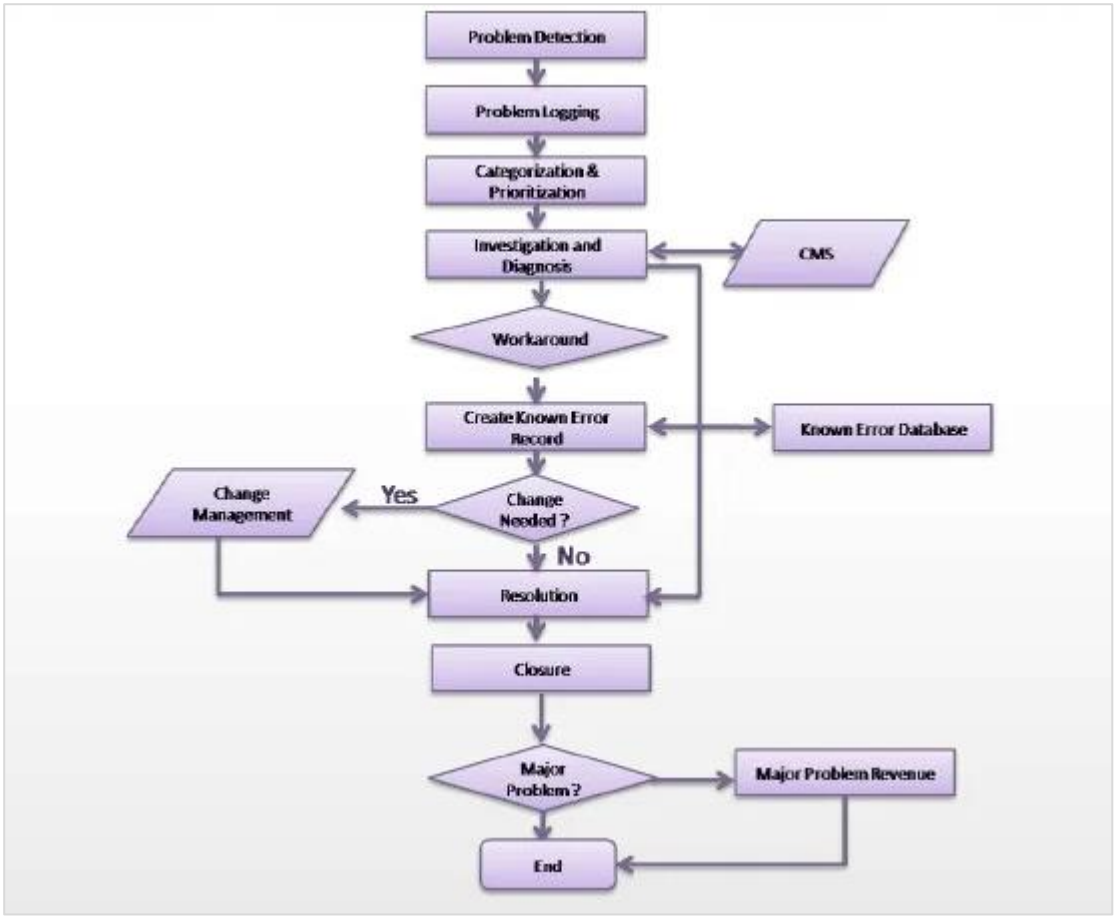
1. Explain briefly various tools, process & technologies to facilitate problem identification, investigation, analysis & resolution.

2. Include it as part of Project Presentation.

Solution:

6.1 Process

Below is a typical workflow for problem management.



6.2 Tools & Technologies

1. Detect the problem

A problem is detected or raised through the user or **service desk** to the **call center** or **help desk**.

2. Log the problem

The problem is recorded with information such as date and time of occurrence and problem symptoms. This is often accomplished via an **issue ticketing system**.

3. Categorize the problem

With the help of the ticketing system, the reported problem can be categorized. This helps in tracking the incident and assignment of follow-up actions or resources.

4. Prioritize the problem

The problem is then prioritised based on the impact to the user and on the business. Urgent cases get higher priority for remedy actions.

5. Investigate and diagnosing the problem

Critical problems get investigated first as their impact is greatest. Diagnosing the problem involves analysing the incident that leads to the problem. More testing or simulation may be required. Source code debugging can also be performed.

6. Identify a workaround for the problem

If a workaround is available, it should be used to restore the service as soon as possible to minimize impact to user and business. Even though a workaround is temporary measure, it is important as the time to resolve the problem may be unpredictable.

7. Raise a known error record

Once a workaround is identified, it should be recorded as a known error so that similar incidents can be resolved quickly. A **knowledge-based database** can be used to store all these known errors.

8. Resolve the problem

Resolution to a problem resolves the root cause of a set of incidents and prevents these incidents from recurring. Some resolutions require **change management**.

9. Close the problem

When the problem is resolved, it can then be closed. The **ticketing system** can be updated with the appropriate status so that the end user can be informed.

10. Review the problem

During the review, the problem management team evaluates the problem documentation and identifies what happened and why. Lessons learned, such as process bottlenecks, what went wrong, and what helped should be discussed. The objective of the review is to prevent future problems.

7 Task 3

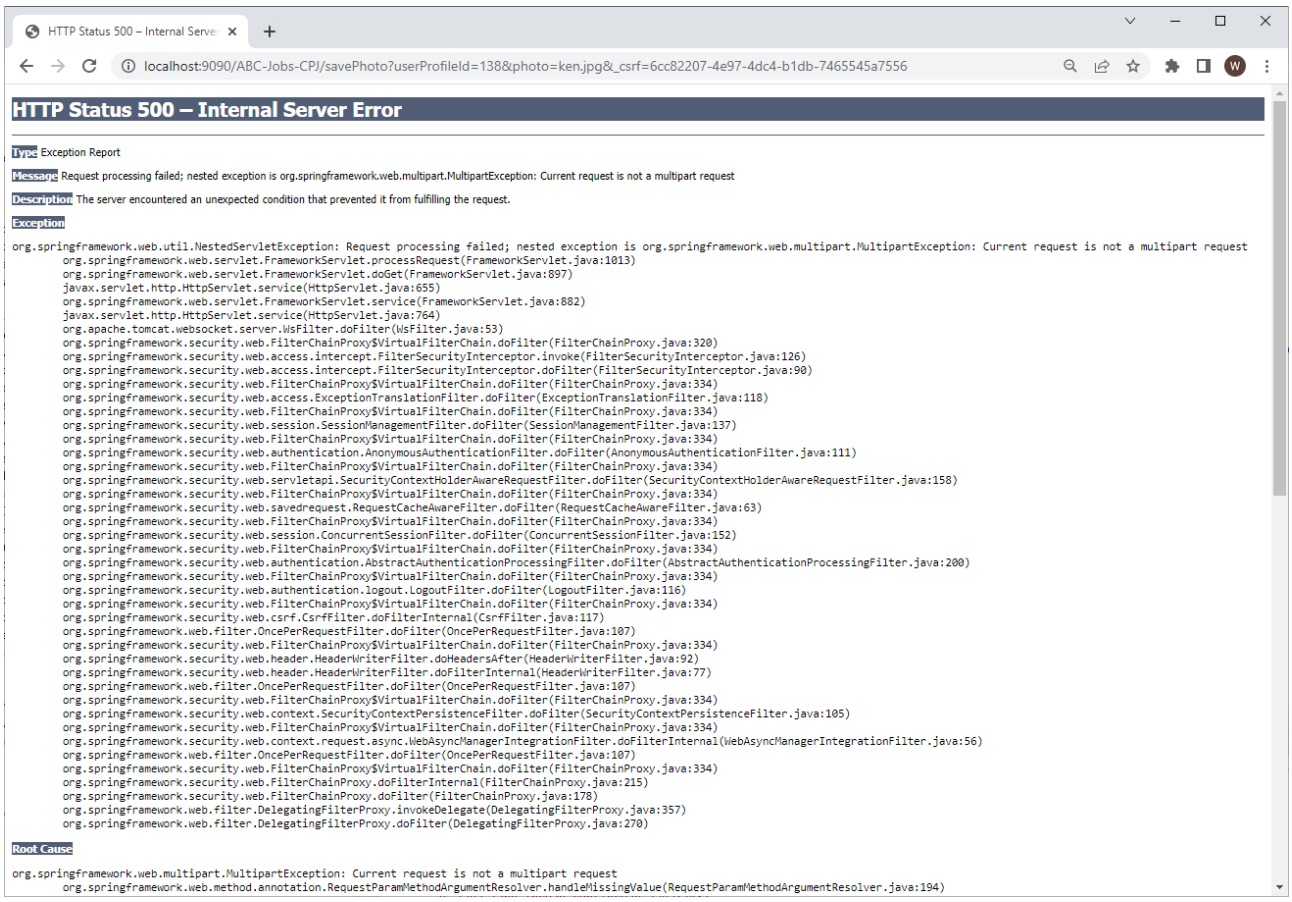
Task Statement:

1. Explain briefly various steps you will take to investigate & diagnose problems.
2. Include it as part of Project Report

Solution:

7.1 Problem Identification

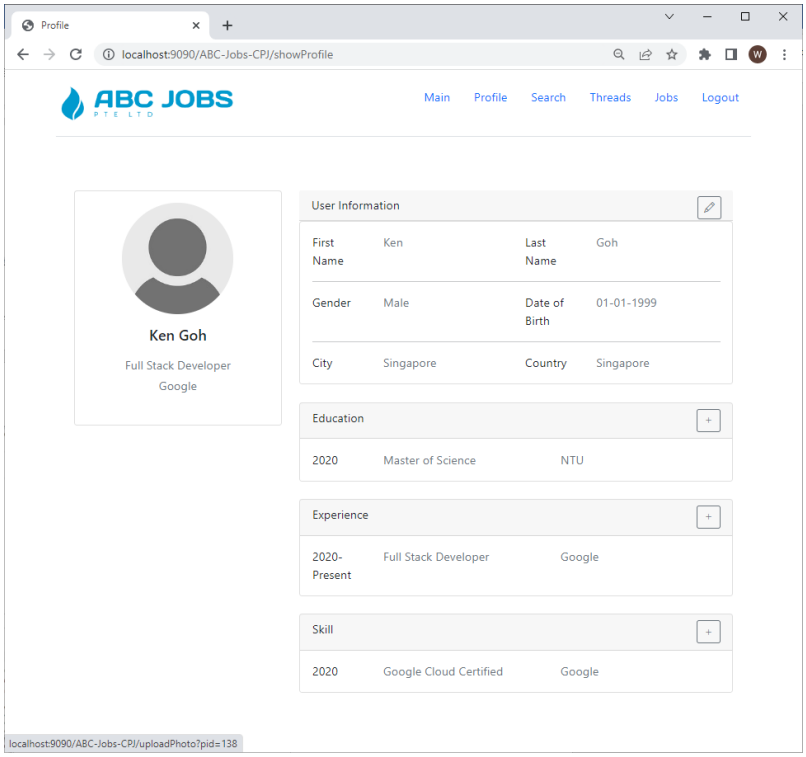
Problem statement – User unable to upload profile picture. A HTTP Status 500 – Internal Server Error occur.



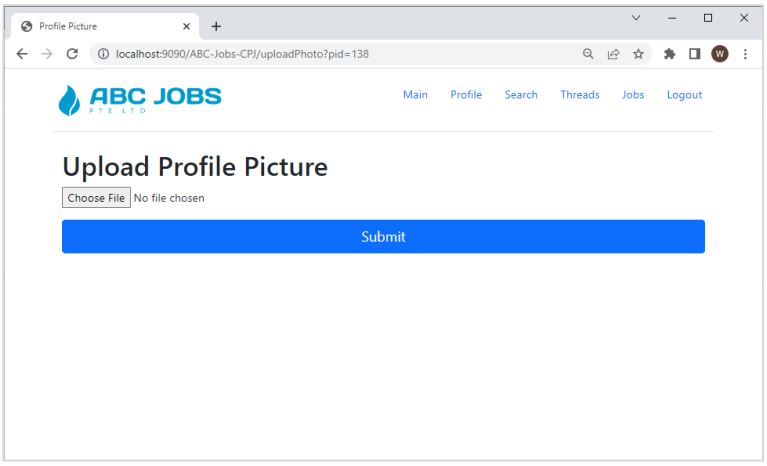
7.2 Problem Logging, Investigate and Diagnosis

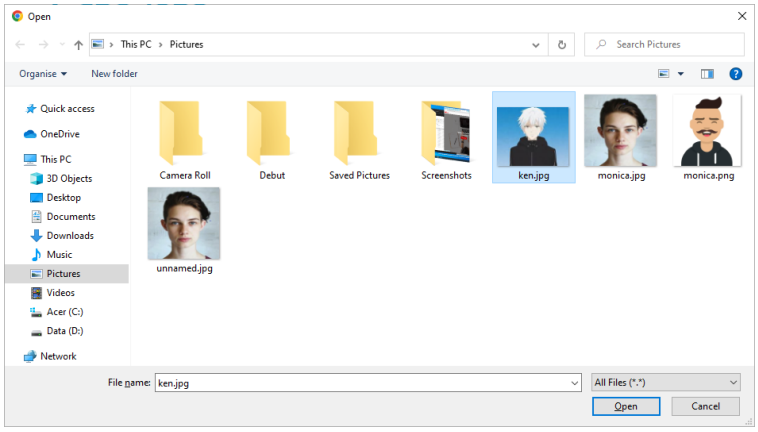
The sequence of events leading to the problem are as follow.

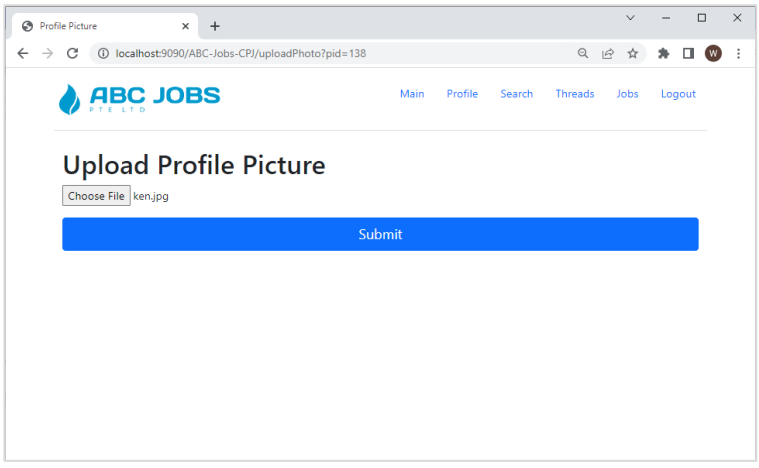
1. This is the profile page before update of profile picture.



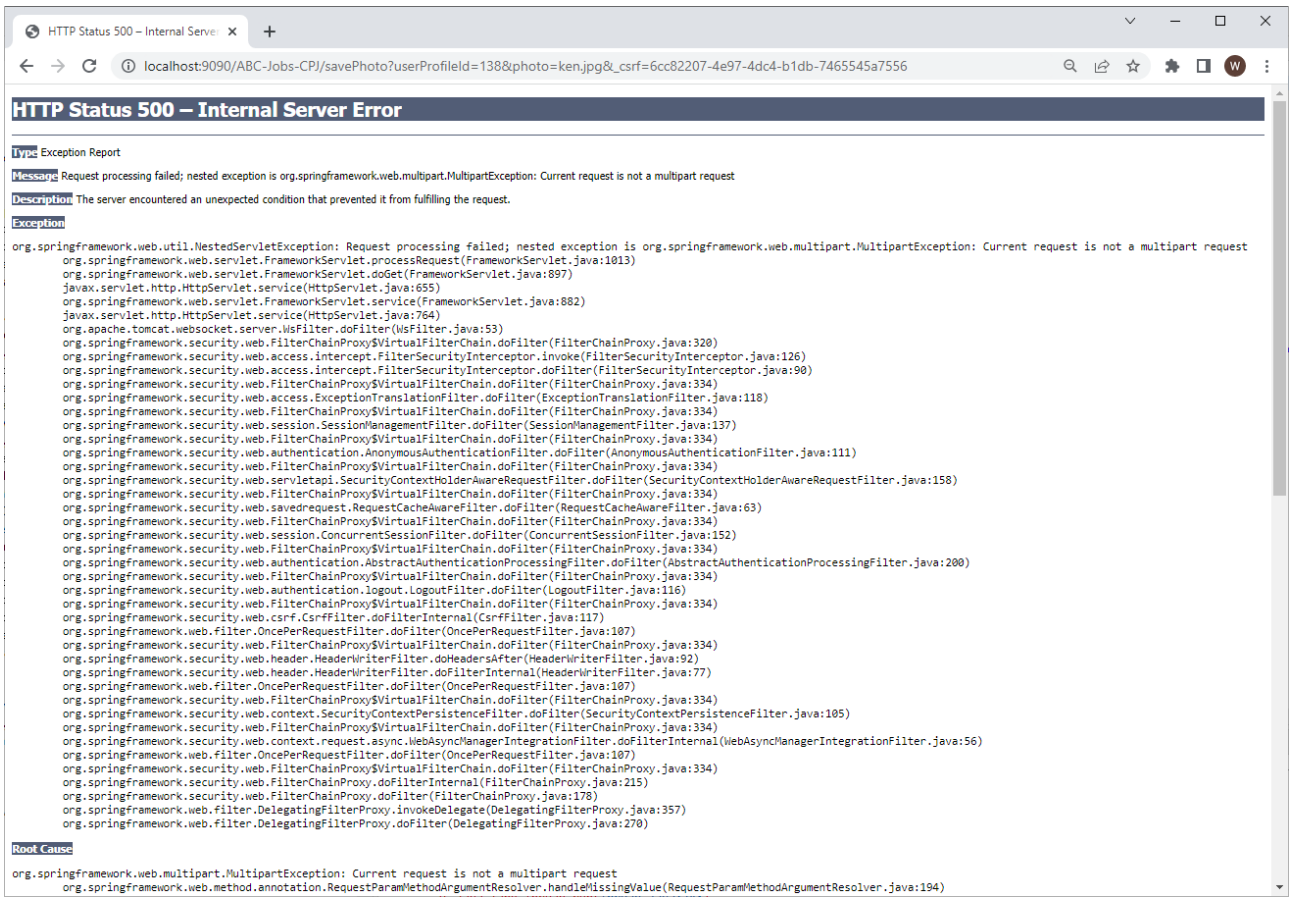
2. Initiate the update of profile picture and selecting of the picture to upload.



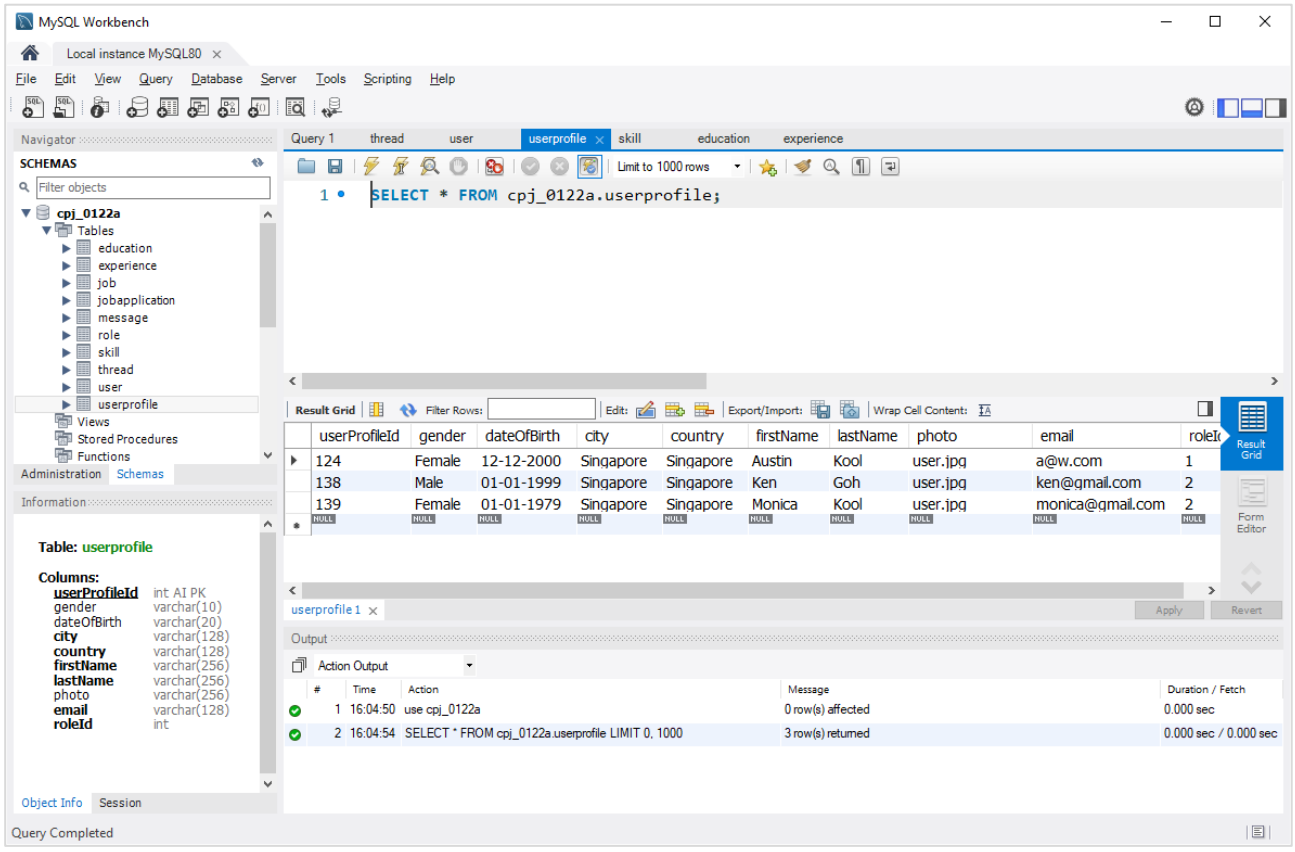




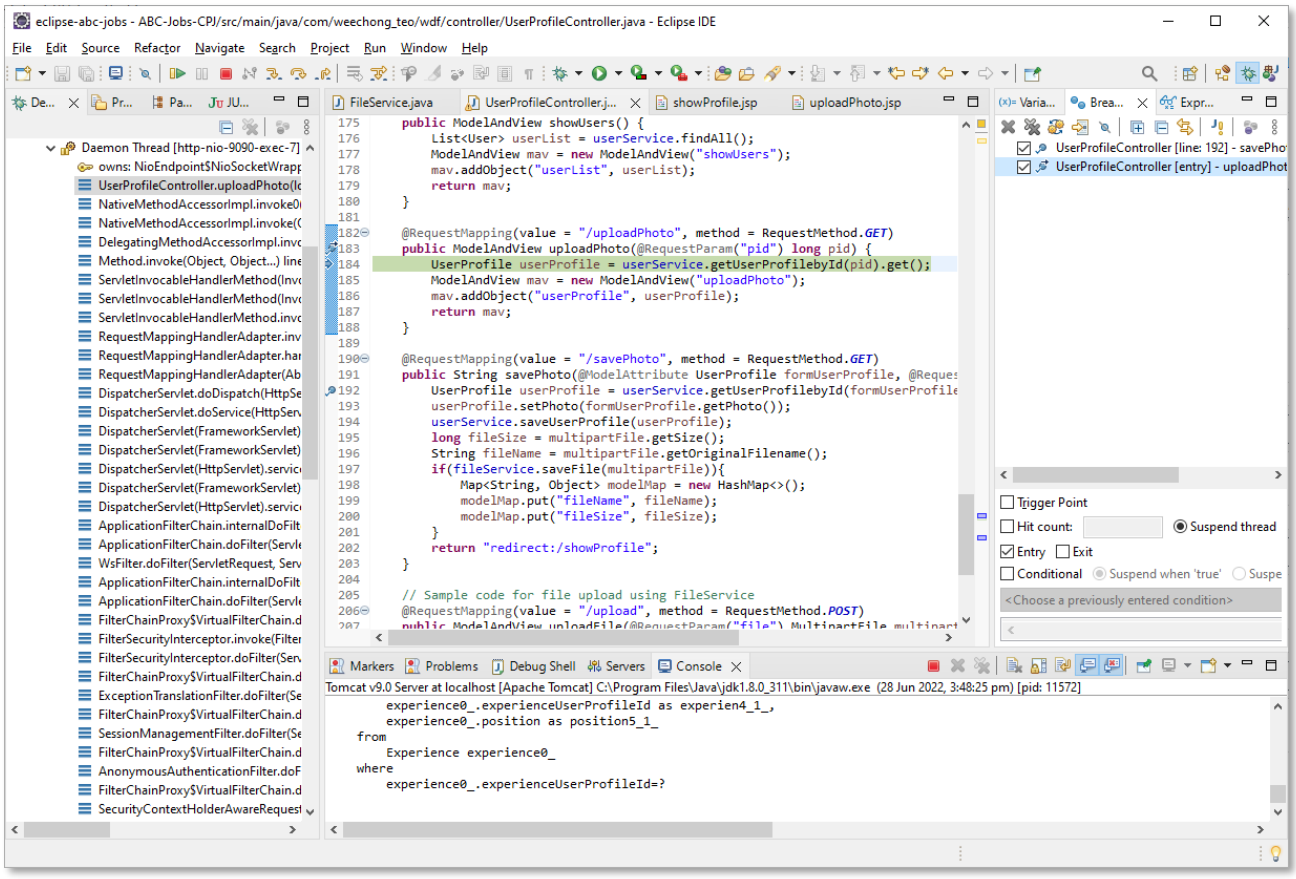
3. The process terminated prematurely with a HTTP Status 500 – Internal Server Error.



4. Investigate the database record shows the profile picture is not updated.



5. Diagnose by tracing the source code using debug mode in Eclipse IDE to narrow down the root cause.



8 Task 4

Task Statement:

1. Briefly explain how you will prioritize, categorize incident & change requests for the application according to their severity, frequency or potential implication.

2. Include it as part of Project Presentation.

Solution:

Scenario ID	Precondition	Test Step	Test Data	Expected Result	Actual Result	Pass/ Fail	Problem Category	Problem Priority	Problem Frequency
TS0008	1. Community Portal installed 2. Existing user	1. Goto Profile page after login 2. Click User icon in the left panel 3. Select the picture to upload and submit	Email = ken@gmail.com Password = 1234 File = ken.jpg	Should go to the profile page to show the updated information.	Did not show the profile page as expected. An error page of HTTP Status 500 – Internal Server Error is shown.	Fail	Major	High	Always

Test scenario TS0008 issue is classified as follow.

1. Problem Category – Major
2. Problem Priority – High
3. Problem Frequency - Always

The issue is categorised as major with high priority to take action as it always happens.

User unable to complete the profile picture upload but no impact to the functionalities of the community portal.

Complete exception screen is shown which is a potential security exposure.

9 Task 5

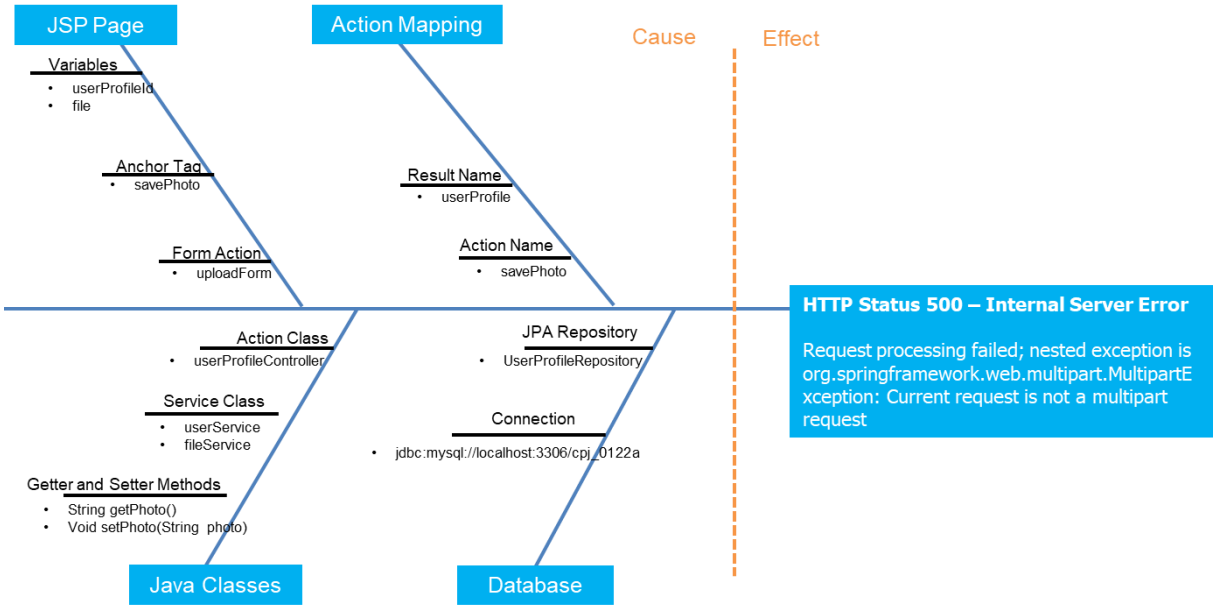
Task Statement:

1. Explain about solution you will implement to address the root cause of the problem and avoid their reoccurrence.
2. Include it as part of Project Presentation

Solution:

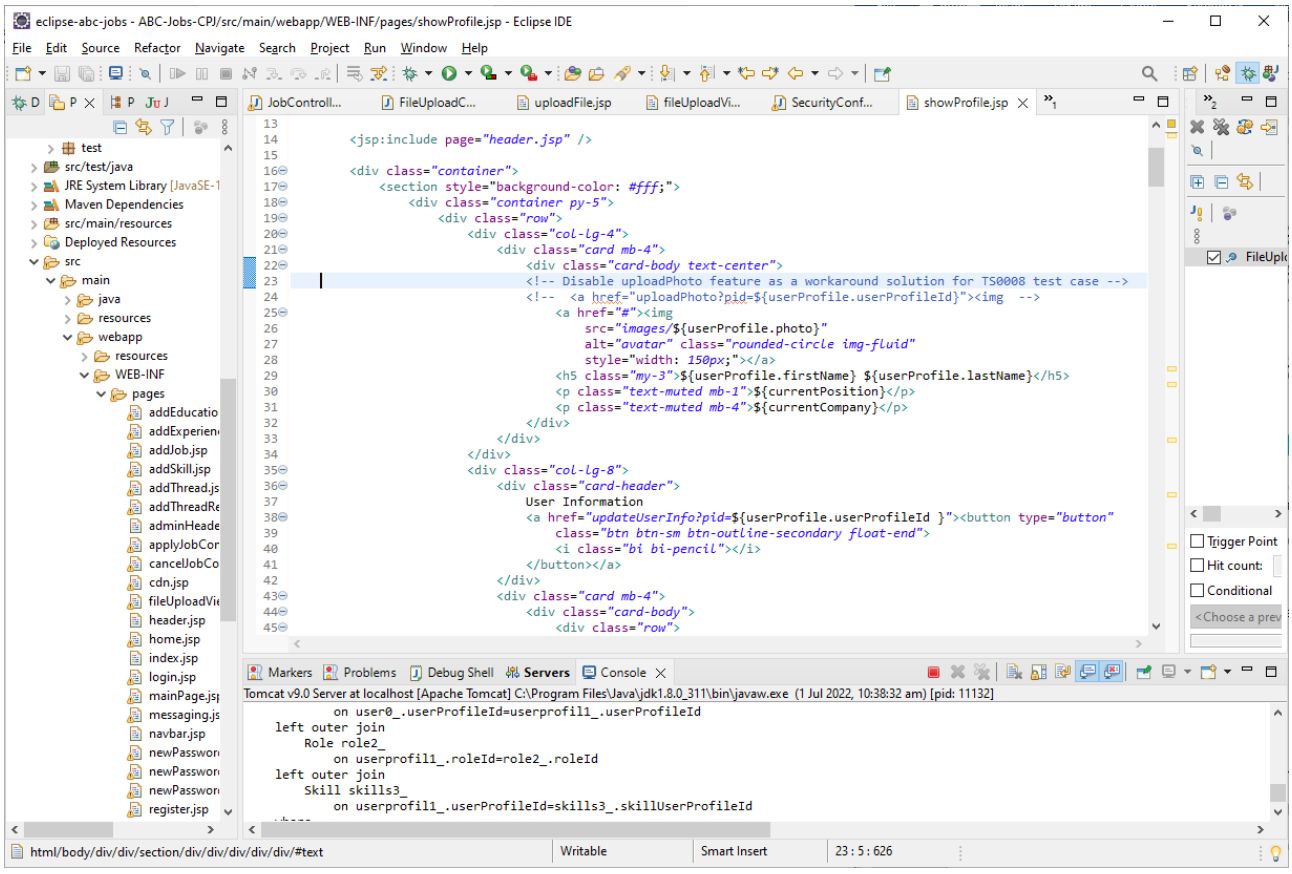
Using the Fish-Bone approach, we narrow down the following possible root cause.

1. JSP page
2. Action Mapping
3. Java Classes
4. Database



As the issue is not a critical feature of the community portal and has no impact to operation of the community portal, the following remedy actions are to be taken to avoid the reoccurrence of the problem.

1. Disable profile picture upload feature in the profile page as a workaround
2. Code change to disable the profile upload feature and redeployment of the code
3. Code amendment to allow profile picture upload to be included into the fixes in the next release version of the application



10 Task 6

Task Statement:

1. Briefly explain how will you document the problems encountered and monitor them
2. Explain briefly any systems you will implement.
3. Include it as part of Project Presentation

Solution:

Known Error Database						
Issue #	Issue Description	Issue Type	Root Cause	Workaround	Status	Date Resolved
1	Unable to upload profile picture	Technical	UserProfileController unable to receive the file upload information	Code change to disable upload of profile picture in Profile page	Resolved	28/6/2022

Following systems can be implemented to support problem management.

1. Call Center or Service Help Desk

This is to first level contact point for end user to report any issue encountered when using the application.

2. Issue Tracking System

Once a problem is reported, it will be recorded in an issue tracking system for problem categorization, prioritization and monitoring until the problem is resolved and closed.

3. Know Error Database

A Know Error Database system can be setup to help to resolve repeated incidents quickly at the first level support.

4. Change Request Management

For problems that require changes to the functionalities, a change request management system must be setup to keep track the request, monitor the progress of the change until the deployment of the change.

New feature requests from end user can be periodically studied to improve the functionalities of the community portal. These proactive enhancements can be handled by this system.

5. Source Code Version Control System

To track source code, backup and rollback if required.

11 Task 7

Task Statement:

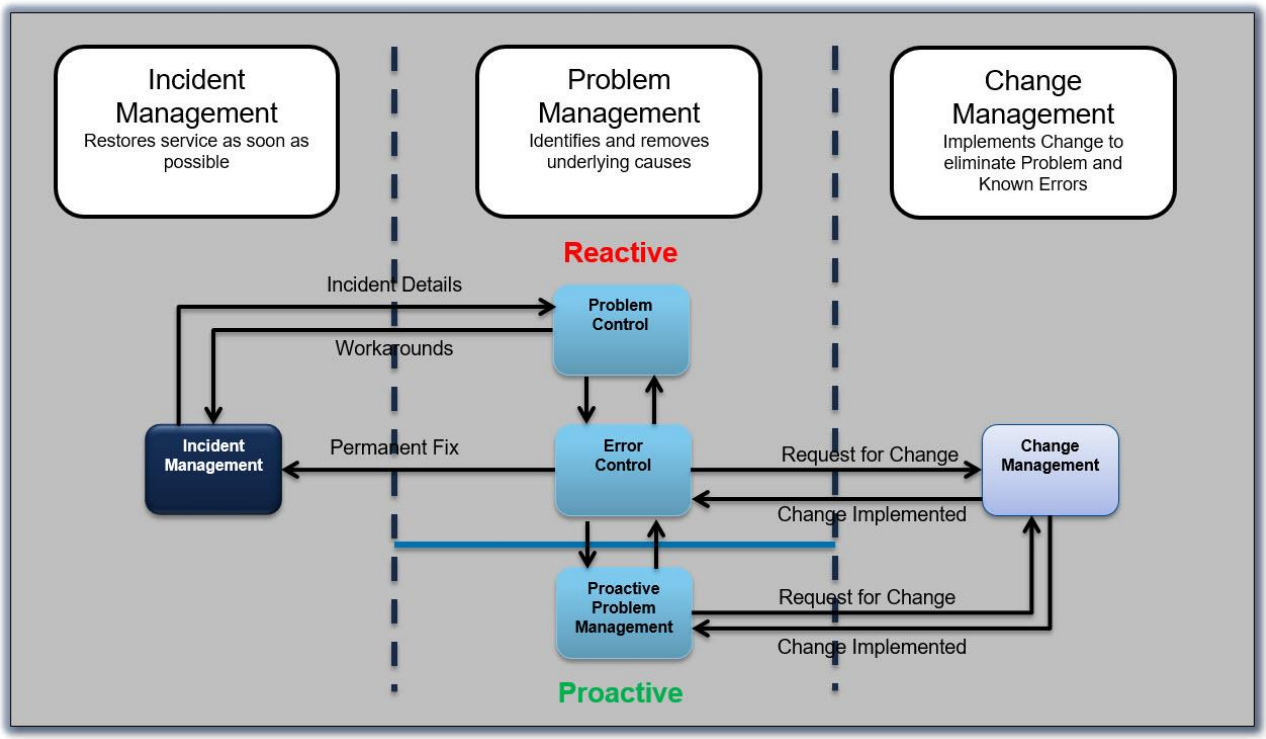
1. Briefly explain any best practices and industry standards in documentation related to problem management.

2. Include it as part of Project Report.

Solution:

Based on the ITIL best practises and guidelines, ABC Jobs Pte Ltd is recommended to adopt the following for a better customer experience.

1. Continual improvement of the Community Portal with proactive problem management
2. Appoint a problem management team to track incidents, monitor resolutions and close problem with regression testing
3. Appoint a first level contact support team to be responsible with incident management with a Known Error database to resolve repeated issues quickly
4. Define a clear process flow from incident management to problem management to change management teams and vice versa.

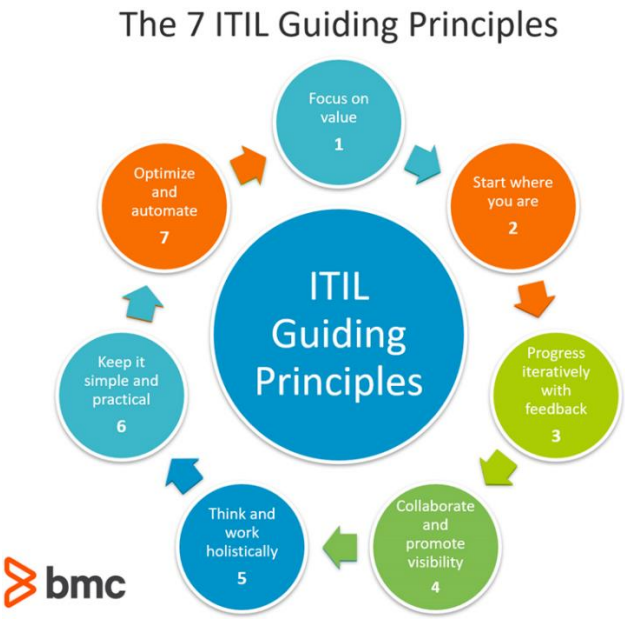


Reference: https://www.bmc.com/blogs/itil-best-practices/.

11.1 Best Practices

Four best practices to recoup value in an organization's Information Technology Infrastructure Library (ITIL) adoption journey.

11.1.1 Adopt the ITIL Guiding Principles



The 7 ITIL Guiding Principles are as follows:

1. Focus on value

To apply this principle successfully, consider this advice:

a. Know how service consumers use each service.
b. Encourage a focus on value among all staff.
c. Focus on value during normal operational activity as well as during improvement initiatives.
d. Include a focus on value in every step of any improvement initiative.

2. Start where you are

To apply this principle successfully, consider this advice:

a. Look at what exists as objectively as possible, using the customer or the desired outcome as the starting point.
b. When examples of successful practices or services are found in the current state, determine if and how these can be replicated or expanded upon to achieve the desired state.
c. Apply your risk management skills.
d. Recognize that sometimes nothing from the current state can be re-used.

3. Progress iteratively with feedback

To apply this principle successfully, consider this advice:

a. Comprehend the whole, but do something.
b. The ecosystem is constantly changing, so feedback is essential.
c. Fast does not mean incomplete.

4. Collaborate and promote visibility

To apply this principle successfully, consider this advice:

a. Collaboration does not mean consensus
b. Communicate in a way the audience can hear
c. Decisions can only be made on visible data

5. Think and work holistically

To apply this principle successfully, consider this advice:

a. Recognize the complexity of the systems
b. Collaboration is key to thinking and working holistically
c. Where possible, look for patterns in the needs of and interactions between system elements
d. Automation can facilitate working holistically

6. Keep it simple and practical

To apply this principle successfully, consider this advice:

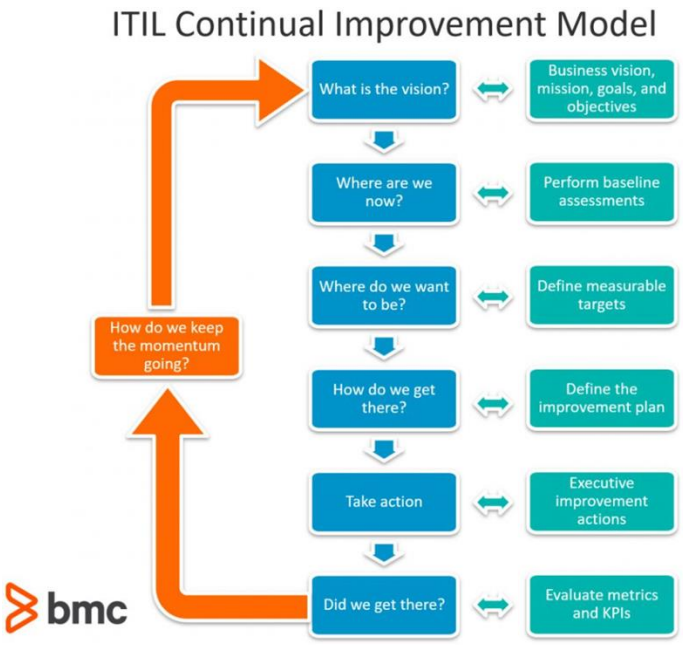
a. Ensure value
b. Simplicity is the ultimate sophistication
c. Do fewer things, but do them better
d. Respect the time of the people involved
e. Easier to understand, more likely to adopt
f. Simplicity is the best route to achieving quick wins

7. Optimize and automate

To apply this principle successfully, consider this advice:

a. Simplify and/or optimize before automating
b. Use automation to reduce toil: tasks which are manual, tactical, devoid of enduring value and/or linearly scaling
c. Define your metrics
d. Use the other guiding principles when applying this one

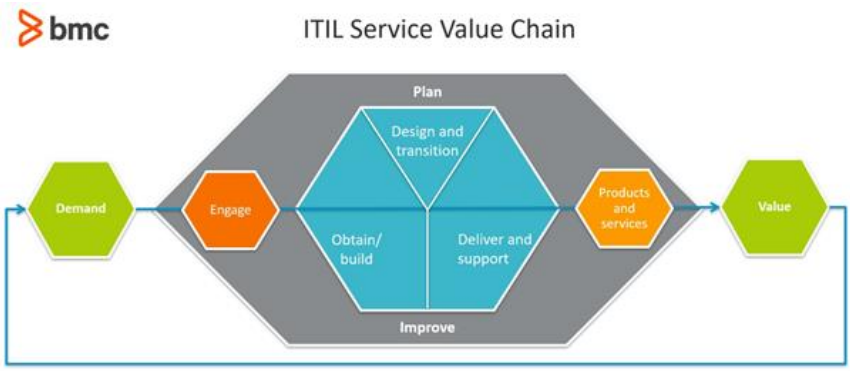
11.1.2 Adopt the Continual Improvement Model



The continual improvement model is very useful for any enterprise service management improvement initiative that benefits customers and the business. This model can target specific improvements in any of the four dimensions:

1. Organizations and people
    a. Clearly define the roles and responsibilities
    b. Ensure reporting lines and communication channels are open and clear
    c. Establish a leadership framework to provide direction and oversight
2. Information and technology
    a. Data - from creation, access, use, modification, storage to disposal, in order to maximize the value of the data in the delivery of technology services
    b. Technology – Collaboration, social media tools, cloud services, AI and blockchain
    c. Security - Availability, capacity, security and continuity
3. Partners and suppliers
    a. Coexist and collaborate
    b. Increase value in the entire supply chain
4. Value streams and processes
    a. Integrated and coordinated way to enable value creation through products and services

11.1.3 Adopt the Service Value Chain approach



The service value chain is an operating model for the creation, delivery and ongoing improvement of services. It outlines the key activities required to create value in response to demand, through the creation and delivery of products and services.

There are six activities in the service value chain which represent the steps an organization takes in the creation of value:

1. Plan

To ensure a shared understanding of the vision, current status, and improvement direction for all four dimensions and all products and services across the organization.

2. Engage

To provide a good understanding of stakeholder needs, ensure transparency, and maintain continual engagement and good relationships with all stakeholders.

3. Design and Transition

To ensure that products and services continually meet stakeholder expectations for quality, cost, and time to market.

4. Obtain/Build

To ensure that service components are available when and where they are needed, and that they meet agreed specifications.

5. Deliver and Support

To ensure that services are delivered and supported according to agreed specifications and stakeholders' expectations.

6. Improve

To ensure continual improvement of products, services, and practices across all value chain activities and the four dimensions of service management.

11.1.4 Adopt the Management Practices guidance

The ITIL SVS describes how all the components and activities of the organization work together as a system to enable value creation.

The 5 elements which support the transformation of demand into valuable outcomes are defined as follows:

1. Guiding Principles

Recommendations that can guide an organization in all circumstances, regardless of changes in its goals, strategies, type of work, or management structure

2. Governance

The means by which an organization is directed and controlled

3. Service Value Chain

A set of interconnected activities that an organization performs to deliver a valuable product or service to its consumers and to facilitate value realization

4. Practices

Sets of organizational resources designed for performing work or accomplishing an objective

5. Continual Improvement

A recurring organizational activity performed at all levels to ensure that an organization's performance continually meets stakeholders' expectations