



Academy of
Engineering

(An Autonomous Institute Affiliated to Savitribai Phule Pune University)

RISK MANAGEMENT

Risk Mitigation Planning

Online Medicine Ordering System

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Approach for Risk Management ----->



1. Risk Identification:

- We first need to identify the risks that we can likely encounter.
- The identification can be done in modular, sequential and requirement-based fashion.

Risks Identified in our Project ----- >

- Login Conflict
- Database failure / remote or cloud DB not responding
- Server down / unavailable
- Payment failure
- Failure to load data to client side from server
- Unresponsive due to Too many requests
- Unavailability of stock
- Spam requests
- Concurrency issue while ordering
- Security issues / loopholes

2. Risk Analysis----- ≥

Here we have two essential metrics for analyzing the risk:

a. Risk Impact / severity:

Impact of the risks identified can be categorized as

1. Low
2. Moderate
3. High
4. Critical

b. Risk Probability:

The likelihood of the risk is again categorized as

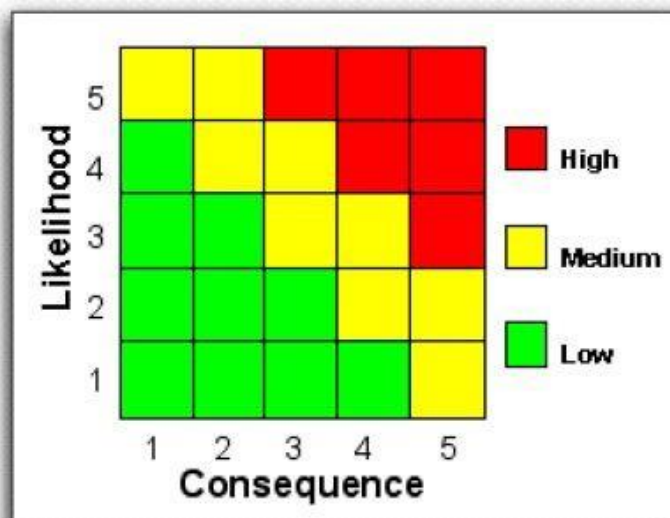
1. Low
2. Medium
3. High

3. Mitigation Priority----- ≥

Once we are ready with our metrics of risk, considering our requirements and other factors such as delivery time, cost, assets affected, we have to set the priorities for mitigating the risks.

We can set one of the following priorities for the above approach:

1. Low
2. Medium
3. High



4. Risk Mitigation Plan ----- ≥

1. The activities in risk mitigation plan involves
 - a. Risk Acceptance
 - b. Risk Avoidance
 - c. Risk Control
 - d. Risk Transfer
 - e. Risk Monitoring

| ID | Risk Identified | Risk Impact | Probability | Priority | Mitigation | Action |
|----|---|---|-------------|----------|--|------------------------------|
| 1 | Login Conflict: An attempt to login to the same account from multiple devices can be made (at once or while one device is logged in and then other attempts to log-in) which arises session concurrency issues. | Moderate (This problem is highlighting when any transaction is taking place) | Low | High | Pre-emptive Sessions We can keep session locks. As soon as any user logs in from another device the other device will be logged out and atomicity will be preserved. | Control |
| 2 | Database failure / remote DB not responding | High | Low | High | A prominent, flexible and sustainable cloud service needs to be purchased in order to assure seamless and immaculate accessibility. Also, to overcome data loss, timely backups need to be automated. | Avoid And Transfer |
| 3 | Server Failure (down / maintenance / offline) Due to several contingencies the server may go offline or be down for a while. Also, during maintenance the services may get stopped | High | Low | High | RAID Multiple server instances Active automated backups, RAID disks and multiple server instances (spare servers) Deploy and host on cloud (AWS) | Transfer |

| | | | | | | |
|---|--|----------|----------|---|--|---|
| 4 | Payment Failure (Bank server down) (Gateway unavailable) (Network issue) | Critical | Moderate | High | Reflect the failure reasons And ensure atomicity through commits and rollbacks | Accept |
| 5 | Failure to load data from server to client (Heavy CSS or connection timeout) | Low | Low | Moderate | Keep most of the CSS and UI code in Client side. Show user a progress bar until page loads. | Control |
| 6 | Unresponsive due too many requests Server may get overwhelmed requests and can get crashed | High | Low | Low (High when service is scaled higher) | Use cloud deployment and allocate flexible resources. (High-capacity server) (eg. AWS lambda) | Accept and Transfer |
| 7 | Unavailability of stocks | Moderate | High | Moderate (For low scale manual intervention can be done but in case of huge order, not possible) | Contact to the manager for extra stock or keep backup of every stock. | Control or Manage stock (Depend ingupon cost) |
| 8 | Spam Requests (Spamming from the same device / IP / account) | Moderate | Low | Low | Block the user IP/ device for certain time frame Flag the account as spam | Avoid |
| 9 | Concurrency issue while ordering (Multiple users may want to order the same | High | High | High | Exclusive / Non-preemptible transaction lock (Consistent Access) When one user has proceeded to the transaction part, The | Control |

| | | | | | | |
|----|---|---|-----|----------|---|---|
| | medicine and proceed for payment at the same time.) | | | | ordering option for the medicine will be locked until transaction is completed. | |
| 10 | Security issues and Loopholes (defects / bugs) (There may exist a number of unexplored security risks in the site and deployment that needs to be addressed) | Moderate (Unauthorized login will lead to major security issues) | Low | Moderate | Need to appoint a security team or ethical hackers who shall find the security glitches and flaws in the system. Use testing tools such as selenium to detect bugs. May also go for a bug-bounty program. However, there exist trust issues when made public. So, better to keep no stones unturned during acceptance testing. | Transfer Monitor Avoid Control |

Inference ----- ≥

Based upon the standard risk assessment format we developed risk mitigation strategies for all the risks that we have identified in our project. The further consists of actual implementation of the risk mitigation strategies and taking concrete actions.
