

# **SPIRAL MODEL FOR E-LEARNING PLATFORM**

## **PHASE: 1**

### **Objective determination and risk analysis**

Following are the objectives that we are taking into consideration with the risks associated with them →

#### **Objective 1: User registration and login**

**Description:** Users should be able to register and create an account on the platform, we will also store their activities in the session storage. Users can also log in if they have already registered on our platform.

#### **Risk's Involved :**

1. **Unauthorized access:** If a user's login credentials are compromised, an attacker may be able to gain access to sensitive information or perform unauthorized actions on behalf of the user.
2. **Password attacks:** Password attacks, such as brute force attacks or dictionary attacks, can be used to try to guess a user's password and gain unauthorized access to their account.
3. **SQL injection attacks:** If the website's login system is not properly secured, it may be vulnerable to SQL injection

attacks, in which an attacker is able to inject malicious code into the website's database.

## **Objective 2: Course and lesson management**

**Description:** Administrators and faculty should be able to create, edit, and delete courses and lessons. Users should be able to view a list of available courses and lessons. Users should be able to enrol in their choice of course and complete them.

### **Risk's Involved :**

1. **Data security:** Confidential and sensitive information such as student records, financial information, and personal data must be kept secure to prevent unauthorized access or theft.
2. **Content integrity:** It is important to ensure that the content of the courses and lessons is accurate, up-to-date, and not misleading, to protect the reputation of the e-learning platform and its instructors.
3. **Copyright infringement:** The e-learning platform must make sure that the course content does not infringe on any copyright laws or intellectual property rights.

### **Objective 3: Student Progress Tracking**

**Description:** Users should be able to view their progress in a course or lesson. Administrators should be able to view the progress of all users. Users should be able to receive a certificate of completion upon finishing a course or lesson.

#### **Risk's Involved :**

1. **Data Privacy and Security:** Student information is sensitive and personal, and if the software is not properly secured, this information can be vulnerable to hackers and cybercriminals.
2. **Content integrity:** There is a risk that the software may not accurately track student progress due to incorrect input, technical glitches, or other factors.
3. **Bias in Tracking:** There is a risk that the software may be programmed to track certain metrics that are not representative of actual student progress, leading to a biased evaluation.

### **Objective 4: Online quizzes and assessments**

**Description:** Administrators should be able to create and manage online quizzes and assessments. Users should be able to take quizzes and assessments and receive feedback on their performance.

#### **Risk's Involved :**

1. **Data Security:** Storing student data and exam results online can be vulnerable to hacking, data breaches and cyber-attacks. This can result in sensitive information being stolen or compromised.
2. **Technical Issues:** Technical problems such as server outages, software glitches, and connectivity issues can disrupt exams and affect the accuracy of results.
3. **Cheating:** Online quizzes and assessments can be vulnerable to cheating as students can use external resources or collaborate with others during the exam.

#### **Objective 5: Video and multimedia content delivery**

**Description:** Users should be able to view video and multimedia content within the platform. The platform should support different types of media and content formats.

#### **Risk's Involved :**

1. **Technical Risks:** Technical problems such as server crashes, slow buffering speeds, and connectivity issues can affect the quality of the video and reduce the user experience.

2. **Copyright Infringement:** Video content delivery platforms must ensure that all the videos uploaded by users are original and do not infringe on any copyrights.
3. **Bandwidth Constraints:** Video content requires large amounts of bandwidth, and delivery platforms must ensure that their servers have enough capacity to handle the traffic.

## **Objective 6: Discussion forums and messaging**

**Description:** Users should be able to participate in discussion forums and messaging. Administrators should be able to moderate discussions and messages.

### **Risks Involved :**

1. **Cyberbullying and Harassment:** These platforms can provide a space for users to engage in bullying and harassment, which can cause harm to others and damage the reputation of the platform.
2. **Spreading Misinformation:** Discussion forums and messaging systems can be used to spread false information and conspiracy theories, which can have serious consequences for public health and safety.
3. **Privacy Concerns:** Personal information shared on these platforms can be vulnerable to hacking and data breaches, and users must be informed of the privacy policies of the platform to protect their information.