Risk and Tolerance Analysis

Our scales: we decided to use a simple point scale ranging from 1-5 for probability of occurrence and for the consequence of occurrence, with 1 being very unlikely to occur/little consequences and 5 being highly likely to occur/catastrophic consequences.

Risk score given in tuple (a, b): where a is the probability of occurrence and b is the consequences or occurrence.

1. Authentication System
   1.1 Authentication Interface
      ➢ Authentication bypassed/attacked causing breach of security and loss of confidential student information (2, 5) – riskiest component
   1.2 Authentication Database
      ➢ Database corruption causing loss of login credentials (2, 3)

2. Assignment & Exam System
   2.1 Teacher End Interface
      ➢ Teacher unable to post assignment & due to database (1, 1)
   2.2 Parent End Interface
      ➢ Parents cannot acknowledge test score and update to database (1, 2)
   2.3 Exam Database
      ➢ Database corruption causing loss of student-specific test results & assigned assignments (2, 3)

3. Events & Appointment System
   3.1 Teacher End Interface
      ➢ Unable to arrange multiple time slots for appointment (1, 2)
   3.2 Parent End Interface
      ➢ Unable to view events calendar (1, 3)
   3.3 Appointment Database
      ➢ Database corruption causing loss of existing events and appointments (2, 2)

4. Chat System
   4.1 Teacher End Interface
      ➢ Cannot establish chat connection with parents (1, 4)
   4.2 Parent End Interface
      ➢ Parent cannot respond to chat when teacher has initiated a session (1, 3)
   4.3 Chat Database
      ➢ Database corruption causing loss of chat history (2, 1)

Risk mitigation:

Limit username & password input to only allow [0-9A-Za-z] to prevent SQL injection attack.
Test our system against known attacks and security holes to prevent bypassing authentication.
Encrypt communication between client and database to prevent man in the middle attack.

Tolerance Analysis:
Since a huge portion of our data is sensitive and confidential, data security is of paramount importance. We will test for all edge cases and test against known security vulnerabilities to ensure that we have proper authentication.