

1st March 2023

Group-5

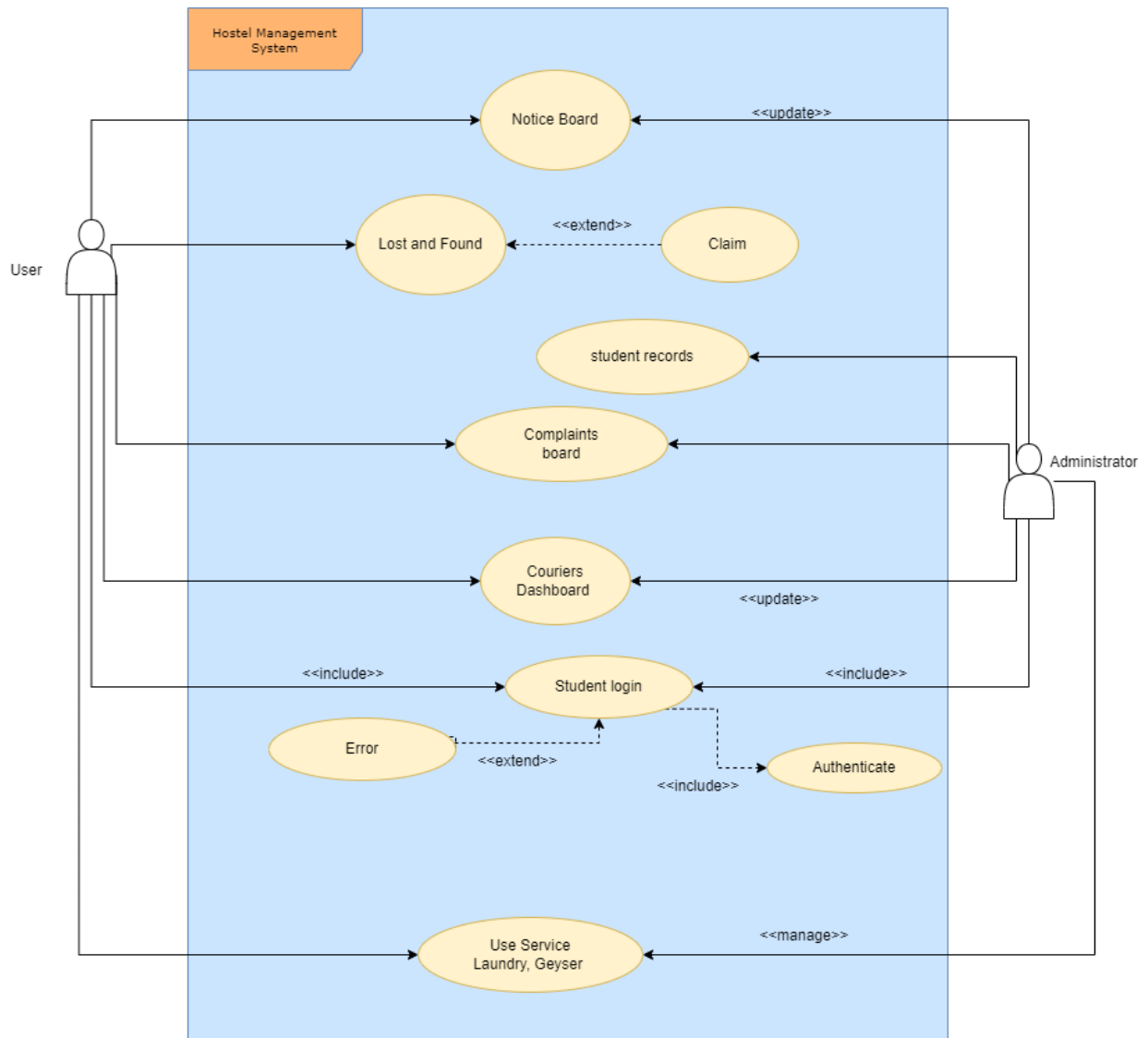
Lab-4

Members:

| | | |
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1. Tools, technologies, and frameworks used to develop the project.

- **Tools** : VS code, Github, Postman, Bootstrap
- **Programming languages** : JavaScript, HTML5, CSS
- **Technologies/Frameworks** : MERN stack
 - Frontend : React
 - Backend : NodeJS
 - Web / HTTP server: Express.js
 - Database : MongoDB

Use case Diagram:

3. Estimating the effort of your project and narrow down the scope using Use-Case points:

- Unadjusted Use case weight

| Use Case | Number of transactions | Use-Case Complexity | Use-Case Weight |
|--|------------------------|---------------------|-----------------|
| Student records | 1 | Single | 5 |
| Notice board | 2 | Simple | 5 |
| Complaints Box | 2 | Simple | 5 |
| Couriers Dashboard | 2 | Simple | 5 |
| Use Services | 2 | Simple | 5 |
| Lost Found | 2 | Simple | 5 |
| Claim | 1 | Simple | 5 |
| Student Login | 4 | Average | 10 |
| Authentication | 1 | Simple | 5 |
| Error | 1 | Simple | 5 |
| Unadjusted Use-Case Weight (UUCW) | | | 55 |

- Unadjusted Actor weights

| Actor | Actors interaction | Actor Complexity | Actor Weight |
|-------------------------------------|--------------------------------|------------------|--------------|
| User | A user interacting through GUI | Complex | 3 |
| Administrator | A user interacting through GUI | Complex | 3 |
| Unadjusted Actor Weight(UAW) | | | 6 |

Unadjusted Use-Case Points (UUCP) = UUCW + UAW = 55+6 = 61

| Factor | Description | Weight (W) | Rated Value (0 to 5) (RV) | Impact ($I = W \times RV$) |
|---|--|------------|---------------------------|------------------------------|
| T1 | Distributed System | 2.0 | 0 | 0.0 |
| T2 | Response time or throughput performance objectives | 1.0 | 3 | 3.0 |
| T3 | End user efficiency | 1.0 | 1 | 1.0 |
| T4 | Complex internal processing | 1.0 | 2 | 2.0 |
| T5 | Code must be reusable | 1.0 | 1 | 1.0 |
| T6 | Easy to install | .5 | 0 | 0 |
| T7 | Easy to use | .5 | 5 | 2.5 |
| T8 | Portable | 2.0 | 3 | 6.0 |
| T9 | Easy to change | 1.0 | 3 | 3.0 |
| T10 | Concurrent | 1.0 | 4 | 4.0 |
| T11 | Includes special security objectives | 1.0 | 2 | 2.0 |
| T12 | Provides direct access for third parties | 1.0 | 5 | 5.0 |
| T13 | Special user training facilities are required | 1.0 | 0 | 0.0 |
| Total Technical Factor (TFactor) | | | | 29.5 |

$$\text{Technical Complexity Factor (TCF)} = 0.6 + (0.01 \times \text{TFactor}) = 0.895$$

Adjust For Environmental Complexity

| Factor | Description | Weight (W) | Rated Value (0 to 5) (RV) | Impact (I = W × RV) |
|--------------------------------------|--|------------|---------------------------|---------------------|
| E1 | Familiar with the project model that is used | 1.5 | 2 | 3 |
| E2 | Application experience | .5 | 0 | 0 |
| E3 | Object-oriented experience | 1.0 | 0 | 0 |
| E4 | Lead analyst capability | .5 | 0 | 0 |
| E5 | Motivation | 1.0 | 5 | 5.0 |
| E6 | Stable requirements | 2.0 | 5 | 10.0 |
| E7 | Part-time staff | -1.0 | 0 | 0 |
| E8 | Difficult programming language | -1.0 | 4 | -4.0 |
| Total Environment Factor (EF) | | | | 14 |

$$\text{Environmental Complexity Factor (ECF)} = 1.4 + (-0.03 \times \text{EF}) = 0.98$$

Calculate Adjusted Use-Case Points (UCP)

$$\text{Adjusted Use-Case Points (UCP)} = \text{UUCP} \times \text{TCF} \times \text{ECF} = 61 \times 0.895 \times 0.98 = 53.51$$

Now that the size of the project is known, and considering that 4 man hours per use case point will be used.

$$\text{Estimated effort} = \text{UCP} \times \text{hours} = 53.51 \times 4 = 214.04 \text{ hours}$$