

# 1st March 2023

## Group-5

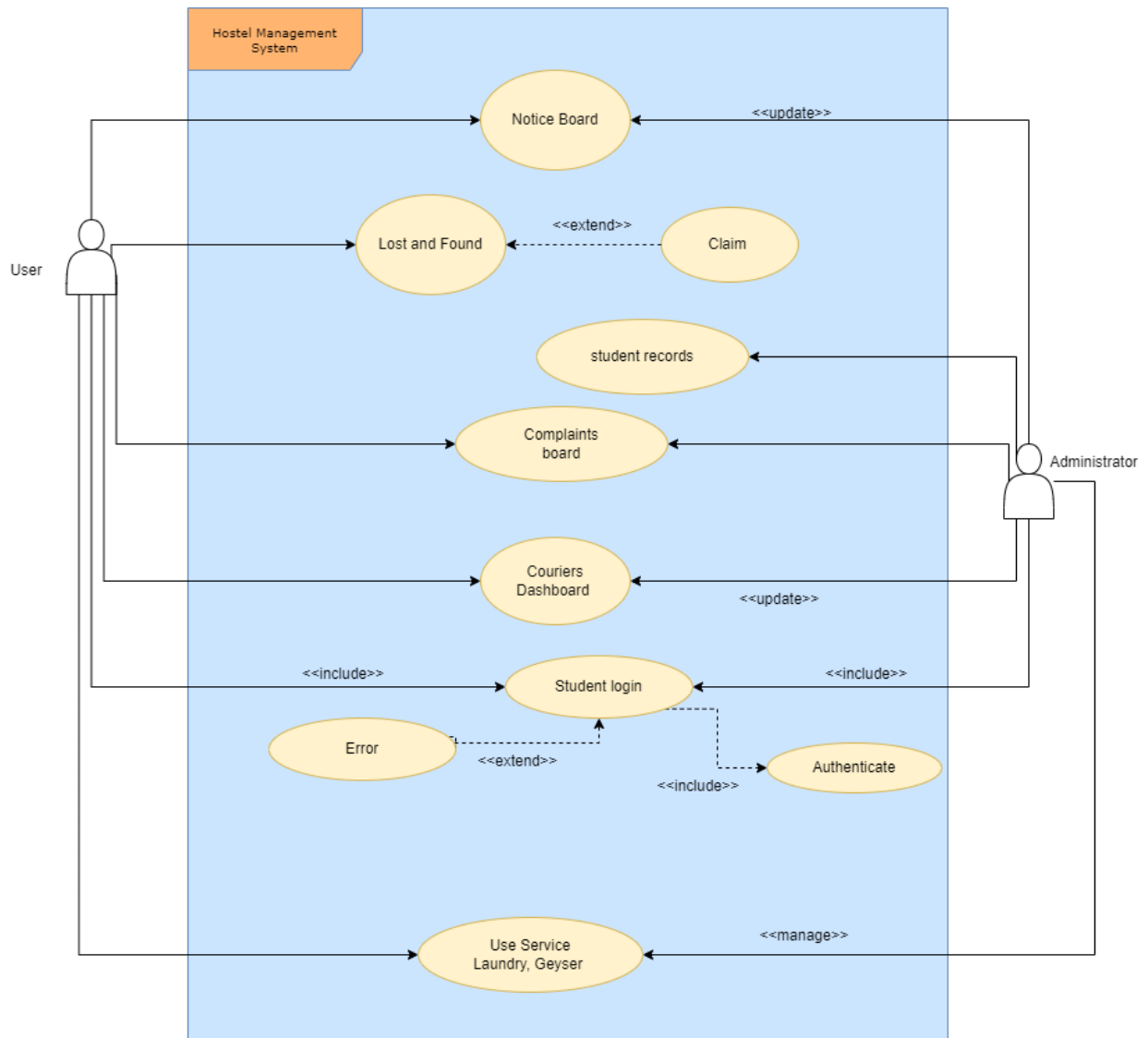
### Lab-4

#### **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
<b>Unadjusted Use-Case Weight (UUCW)</b>			<b>55</b>

- 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
<b>Unadjusted Actor Weight(UAW)</b>			<b>6</b>

**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
<b>Total Technical Factor (TFactor)</b>				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
<b>Total Environment Factor (EF)</b>				<b>14</b>

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

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 15 man hours per use case point will be used.

$$\text{Estimated effort} = \text{UCP} \times \text{hours} = 53.51 \times 15 = 802 \text{ hours}$$