# OOAD ASSIGNMENT - 1

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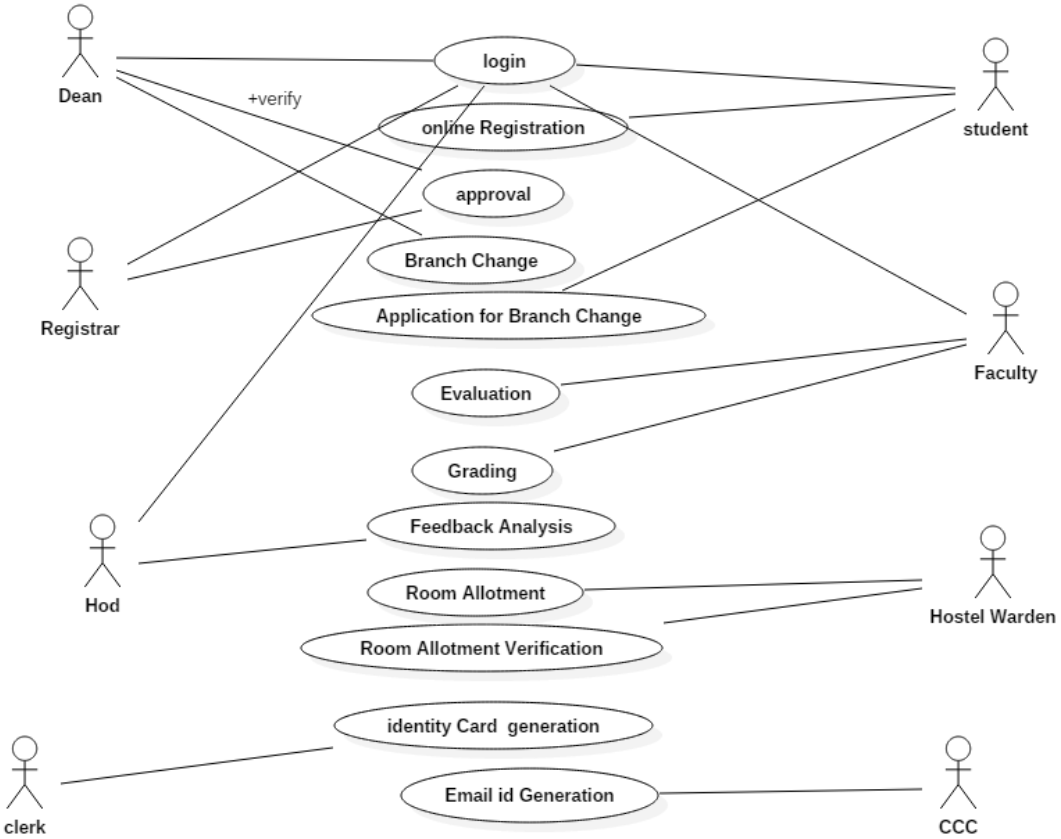
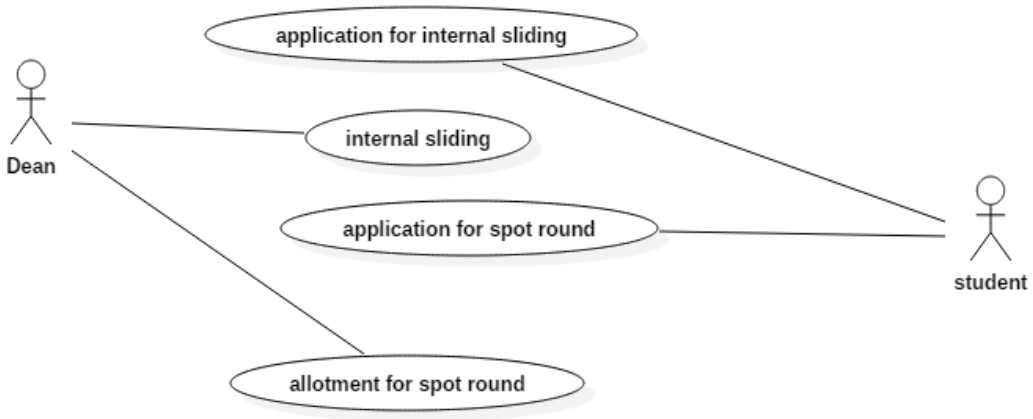
**The process of calculating the UCP for an Admission Process System. The diagram below depicts the Use Case Diagram for the system to be developed.**



## Unadjusted Use Case Weight (UUCW)

To calculate the UUCW, the use cases must be defined and the number of transactions for each use case identified. The Admission Process System use case diagram is depicting that sixteen use cases exist for the system. **Assuming 5 of these use cases are simple, 7 are average and 4 are complex, the calculation for UUCW is as follows:**

UUCW = (Total No. of Simple Use Cases x 5) + (Total No. Average Use Cases x 10) + (Total No. Complex Use Cases x 15)

**For the Admission Process System, the UUCW = (5 x 5) + (7 x 10) + (4 x 15) = 155**

**UUCW = 155**

## Unadjusted Actor Weight (UAW)

To calculate the UAW, the actors must be identified. The Admission Process System use case diagram is depicting eight actors; **two simple for (Clerk, CCC), four average for (Dean, Faculty, HOD, Hostel Warden) and two complex for (Student, Registrar)**. The calculation for UAW is as follows:

UAW = (Total No. of Simple Actors x 1) + (Total No. Average Actors x 2) + (Total No. Complex Actors x 3)

**For the Online Shopping System, UAW = (2 x 1) + (4 x 2) + (2 x 3) = 16**

**UAW = 16**

## Technical Complexity Factor (TCF)

To calculate the TCF, each of the technical factors is assigned a value based on how essential the technical aspect is to the system being developed. The diagram below shows the assigned values for the Admission Process System. The values are multiplied by the weighted values and the total TF is determined.

| Factor | Description | Weight | Assigned Value | Weight x Assigned Value |
|---|---|---|---|---|
| **T1** | **Distributed system** | **2.0** | **5** | **10** |

| | | | | |
|---|---|---|---|---|
| **T2** | **Response time/performance objectives** | **1.0** | **2** | **2** |
| **T3** | **End-user efficiency** | **1.0** | **3** | **3** |
| **T4** | **Internal processing complexity** | **1.0** | **2** | **2** |
| **T5** | **Code reusability** | **1.0** | **3** | **3** |
| **T6** | **Easy to install** | **0.5** | **3** | **1.5** |
| **T7** | **Easy to use** | **0.5** | **5** | **2.5** |
| **T8** | **Portability to other platforms** | **2.0** | **3** | **6** |
| **T9** | **System maintenance** | **1.0** | **5** | **5** |
| **T10** | **Concurrent/parallel processing** | **1.0** | **4** | **4** |
| **T11** | **Security features** | **1.0** | **5** | **5** |
| **T12** | **Access for third parties** | **1.0** | **1** | **1** |
| **T13** | **End user training** | **1.0** | **3** | **3** |
| | | | **Total (TF):** | **48** |

Next, the TCF is calculated:

TCF = 0.6 + (TF/100)

**For the Admission Process System, TCF = 0.6 + (48/100) = 1.08**

**TCF = 1.08**

## Environmental Complexity Factor (ECF)

To calculate the ECF, each of the environmental factors is assigned a value based on the team experience level. The diagram below shows the assigned values for the Admission Process System. The values are multiplied by the weighted values and the total EF is determined.

| Factor | Description | Weight | Assigned Value | Weight x Assigned Value |
|---|---|---|---|---|
| **E1** | **Familiarity with development process used** | **1.5** | **3** | **4.5** |
| **E2** | **Application experience** | **0.5** | **4** | **2** |
| **E3** | **Object-oriented experience of team** | **1.0** | **5** | **5** |
| **E4** | **Lead analyst capability** | **0.5** | **5** | **2.5** |
| **E5** | **Motivation of the team** | **1.0** | **3** | **3** |
| **E6** | **Stability of requirements** | **2.0** | **4** | **8** |
| **E7** | **Part-time staff** | **-1.0** | **1** | **-1** |
| **E8** | **Difficult programming language** | **-1.0** | **4** | **-4** |
| | | | **Total (EF):** | **20** |

Next, the ECF is calculated:

ECF = 1.4 + (-0.03 x EF)

**For the Admission Process System, ECF = 1.4 + (-0.03 x 20) = 0.8**

**ECF = 0.8**

## Use Case Points (UCP)

Once the Unadjusted Use Case Weight (UUCW), Unadjusted Actor Weight (UAW), Technical Complexity Factor (TCF) and Environmental Complexity Factor (ECF) has been determined, the Use Case Points (UCP) can be calculated with the following formula:

UCP = (UUCW + UAW) x TCF x ECF

**UCP = (155 + 16) x 1.08 x 0.8**

**For the Admission Process System, UCP = 147.744**

For the Admission Process System, the total estimated size to develop the software is **147.744 Use Case Points.**

Now that the size of the project is known, the total effort for the project can be estimated. For the Admission Process System example, 22 man hours per use case point will be used.

Estimated Effort = UCP x Hours/UCP

**For the Admission Process System, Estimated Effort = 147.744 x 22**

**Estimated Effort = 3,250.368 Hours**