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# Task 1

## Define the term ‘use case’ and explain the various types of actors in a Use Case.

Use case is defined as a description of the system functionality form users’ view (Bennett, McRobb, & Farmer, 2010).

There are two major types of actors:

* The role of humans who interact with a specific use case in the system.
* The role of other systems which interact with a specific use case in the system.
* The role of devices which interact with a specific use case in the system.

## Explain the difference between the <<include>> and <<extends>> relationships in use case diagrams? Give examples

The <<include>> relationship is used when some functionality is part of many use cases A, B, C ... so we separate this functionality to the separate use case S and then we include the use case S to use cases A, B, C... (Bennett, McRobb, & Farmer, 2010). For example if we have use cases “Pay anyone”, “Transfer”, and “Pay Bills” in each of them we have to check if is enough money on the account. So we form a new use case “Check balance” which will be included in previous use cases and simplifies their description.

The <<extends>> relationship is used when a use case X optionally adds some functionality to a use case Y. For example a use case “check availability of item” can extend a use case “add item to wish list”

## Describe with examples ‘encapsulation’, ‘information hiding’, ‘polymorphism’ and ‘data abstraction’.

## What is the difference between USDP and the Waterfall lifecycles in the relationship of between activities and phases?

## Explain Class diagram. Outline the main steps in developing a class diagram for a Use Case (UC).

# Task 2

## Question 1

### Start line run

### Record employee joining the line

### Record employee leaving the line

### Stop line

## Question 2: Communication diagram

## Question 3: Class diagram

# Bibliography

Bennett, S., McRobb, S., & Farmer, R. (2010). *Object-Oriented Systems Analysis and Design Using UML (4th edition).* Berkshire: McGraw-Hill Education.