MODULE

FIT2099: UML Arrows Cheatsheet

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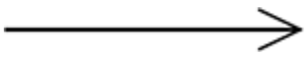
This article lists the most common arrows in the UML class diagram

Association

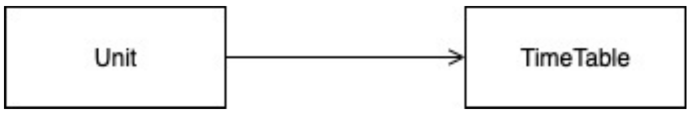
A relation between class A and class B where class B is an attribute of class A.

We use the following arrow to describe the Association relationship.



Java Example

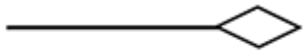
```java
public class Unit {
    TimeTable timeTable;
    // the rest of class unit goes here
}
```



Aggregation

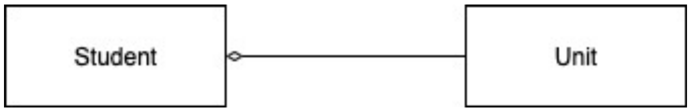
Aggregation is a special type of Association relationship that could occur between classes A and B. In this type, class B (the attribute) can exist independently.

We use the following arrow to describe the aggregation relationship.



Java Example

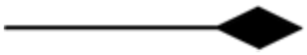
```
public class Unit {
   Student student;
}
```



Composition

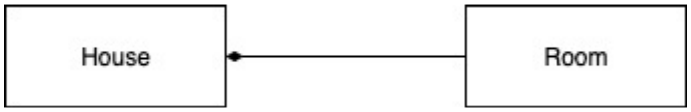
Composition is a special type of Association relationship that could occur between classes A and B. In this type, class B (the attribute) cannot exist independent of class A.

We use the following arrow to describe the Composition relationship.



Java Example

```
public class House {
    Room room;

}
```

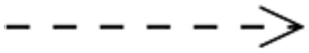


Dependency

Dependency is the most basic and the weakest type of relations between classes. There is a dependency between two classes if some changes to the definition of one class might result in modifications to another class. Dependency typically occurs when you use concrete class names in your code. For example, when specifying types in method signatures, when instantiating objects via constructor calls, etc. You can make a dependency weaker if you make your code dependent on interfaces or abstract classes instead of concrete classes.

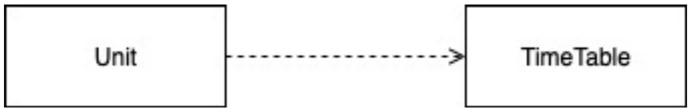
A relationship between class A and class B where class A needs an instance of class B to be sent as a parameter to one of its methods

We use the following arrow to describe the Dependency relationship.



Java Example

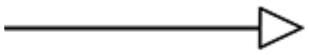
```java
public class Unit {
    void updateStudentsTimeTable(TimeTable timeTable){
        //some code here
    }
    // the rest of class unit goes here
}
```



Inheritance

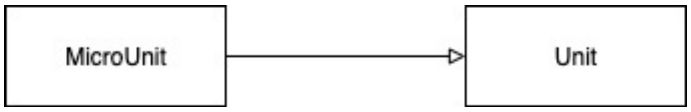
A relationship between class A and class B where class B extends class A.

We use the following arrow to describe the Inheritance relationship.



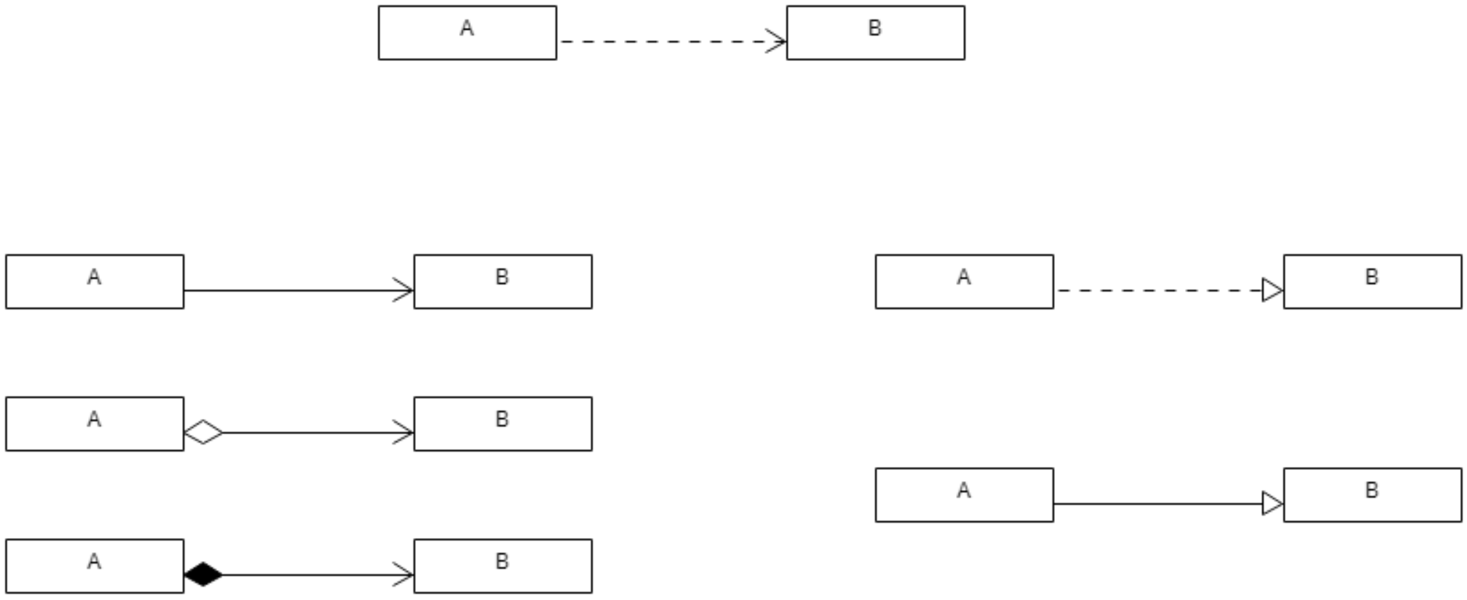
Java Example

```java
public class MicroUnit extends Unit{

    // the rest of class MicroUnit goes here

}
```



In a nutshell:

Dependency: Class A can be affected by changes in class B.
Association: Object A knows about object B. Class A depends on B.
Aggregation: Object A knows about object B, and consists of B. Class A depends on B.
Composition: Object A knows about object B, consists of B, and manages B's life cycle. Class A depends on B.
Implementation/realisation: Class A defines methods declared in interface B. Objects A can be treated as B. Class A depends on B.
Inheritance/generalisation: Class A inherits interface and implementation of class B but can extend it. Objects A can be treated as B. Class A depends on B.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