# Department of Computing

**SE-210: Software Design and Architecture**

**Class:** BESE-9AB

# Lab 06: Creational Design Patterns

# Instructor: Dr. Hasan Ali Khattak

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# Ahmed Hassan Ismail – BESE-9B – 237897

# Lab 07: Creational Design Patterns

### Introduction:

Students will have hands-on experience of implementing a creational design pattern to a given problem.

### Lab Objectives:

This objective of this lab is to get a practical understanding and knowledge of Factory Pattern. After the completion of this lab, students will be able to apply factory design pattern to a given scenario.

### Helping Material:

Please consult lecture slides on LMS.

### Lab Tasks

### Take any example of factory pattern of your own choice and perform the below mentioned tasks.

### Task

1. Draw UML Class diagram of the solution – after applying factory design pattern.
2. Write code for chosen example.
3. Write explanation how this pattern works.

**Answer:**

|  |
| --- |
| Solution |
| UML Class Diagram    Source Code  The Factory Method Pattern gives us a way to encapsulate the instantiations of concrete types. The Factory Method pattern encapsulates the functionality required to select and instantiate an appropriate class, inside a designated method referred to as a factory method. The Factory Method selects an appropriate class from a class hierarchy based on the application context and other influencing factors. It then instantiates the selected class and returns it as an instance of the parent class type. The advantage of this approach is that the application objects can make use of the factory method to get access to the appropriate class instance. This eliminates the need for an application object to deal with the varying class selection criteria.  Use the Factory Method pattern when  • A class can’t anticipate the class of objects it must create.  • A class wants its subclasses to specify the objects it creates.  • Classes delegate responsibility to one of several helper subclasses, and you want to localize the knowledge of which helper  subclass is the delegate. |

### Deliverables

Compile a single word document by filling in the solution part and submit this Word file on LMS. This lab grading policy is as follows: The lab is graded between 0 to 10 marks. The submitted solution can get a maximum of 5 marks. At the end of each lab or in the next lab, there will be a viva related to the tasks. The viva has a weightage of 5 marks. Insert the solution/answer in this document. You must show the implementation of the tasks in the designing tool, along with your completed Word document to get your work graded. You must also submit this Word document on the LMS. In case of any problems with submissions on LMS, submit your Lab assignments by emailing it to **Sundas Dawood** <sundas.dawood@seecs.edu.pk>