CSE 752 Software Architecture and Design Patterns

Design Patterns Activity – Creational Patterns

MCQ, FILLIN, ESSAY, TRUEFALSE are the four main question types in OAES (Online Assessment and Evaluation System). Develop a grading software to evaluate these question types across multiple exam types.

1. Consider two types of exams – GATE, JEE

2. Each exam has a custom concrete implementation of evaluate() for each of the question types

GATE library	JEE library
class GATE_mcq_eval	class JEE_mcq_eval
class GATE_fillin_eval	class JEE_fillin_eval
class GATE_essay_eval	class JEE_essay_eval
class GATE_truefalse_eval	class JEE_truefalse_eval

3. Assume the **response** for evaluation is a simple string for all the question types

4. Each of the above concrete classes has **evaluate(response)** method which will simply print the input **response** string along with the exam type and question type (e.g., "Evaluated <response-string> as per JEE Main MCQ question.")

5. Package the 4 evaluation classes into two separate libraries for **STATIC REUSE**

Main program

1. Create <u>four</u> hard-coded sample responses of four types for two exam types (8 questions in all)
2. Evaluate each response using the evaluator class of respective exam. (Output should contain 8 lines of output – one for each response - produced by the respective **evaluate(response)** method

Tasks to done

1. Create two versions of the solution – (a) using FACTORY METHOD design pattern and (b) ABSTRACT FACTORY

Tasks to be completed

Compare the two implementations as per the following criteria with CODE EVIDENCE to illustrate this:

1. **Flexibility / Extensibility**: Which of the two patterns gives more flexibility? Justify with relevant screenshots of the code AND relevant screenshots of running the code.
2. **Localization of changes**: Which of the two patterns results in LESSER build and testing effort whenever we make changes. Justify with relevant screenshots of the code AND relevant screenshots of running the code.

What to Upload

PDF document with details of the comparison between the two patterns as per the tasks given above.