

Assignment Design Pattern

Name of Classes and there responsibilities:

Assignment class responsible for implementing visitor pattern

AssignmentMenu Class to render GUI [Dummy Class]

CourseIterator to implement iterator pattern

CourseList class to implement the iterator pattern

CourseMenu is abstract class for implementing Course Menu

HacsFacade : Facade class to take care of the facade pattern it calls the classes for bridge pattern, factory pattern, visitor pattern, iterator pattern

HACSMian: Hacs main class to initiate the facade pattern

HighLevelCourseMenu: High level Course responsible for bridge patterna and factory pattern

Instructor: Instructor class to inherit person class

ListIterator: List iterator class for implementing iterator pattern

Login: Login class implementing the implementation for login using façade class

LowLevelCourseMenu: Low level Course responsible for bridge patterna and factory pattern

NodeVisitor: Node Visitor class for Visitor pattern

Person: Person abstract class

PersonFactory: Person Factory class responsible for factory pattern and returning the desired objects

Reminder: Abstract Reminder class for Visitor Pattern

Reminder Visitor class: responsible for implementing visitor pattern

SolutionIterator class: for Visitor Pattern

SolutionList to store list of solutions implementing the iterator pattern

SolutionMenu Class to render GUI [Dummy Class]

Student Class inheriting from person class and implementing bridge pattern

UserInfoltem: User information class

All the patterns are implemented successfully, list of classes participating in the patterns can be seen as follows:

1	Pattern Name	Classes Participating				
2	Facade pattern	Login	Reminder	CourseMenu	Assignment Menu	Solution Menu
3	Visitor pattern	Reminder	CourseList	Assignment	NodeVisitor	ReminderVisitor
4	Iterator pattern	ArrayList	SolutionList	CourseList	ListIterator	SolutionIterator
5	Factory pattern	Course Menu	Person	High level course menu	Low level course menu	Student
6	Bridge pattern	Person	Student	Instructor	Course Menu	High level course menu

Flow of application:

1. Hacsmain class initiate the façade pattern
2. Façade class is responsible for hiding complexity from main(main here is the client class) and handles the entire complex process.
3. Façade initiates the login and validation
4. After login the user is asked to select from the courses (LOW level Course Menu or high level course menu) basis the selection bridge pattern is used with factory pattern to generate a combination of user(Instructor/student) with Course level. PersonFactory class returns the desired object using the factory pattern which is mapped using dynamic dispatching concept of bridge pattern to the relevant course.
5. Next step is to initiate the visitor pattern. Using the method overloading concept of visitor pattern we use the reminders.
6. Now we iterate over the course lists and solution lists for the user using the iterator pattern.

Sample Outputs:

Input set: Username: **Pepe** Password: **1111** Course Menu: **high level course menu**

```

<terminated> HACSMain [Java Application] C:\Program Files\Java\jre1.8.0_201\bin\javaw.exe (Oct 18, 2019, 10:32:02 PM)
Facade pattern initiated
Enter Username
Pepe
Enter Password
1111
Welcome pepe
Select from available Course Menus
  1. High Level Course Menu
  2. Low Level Course Menu
high level course menu
High Level Course Selected ...
Bridge Pattern for connection used
Factory Pattern Initiated for user creation....
Student Menu items ....
Implementing Visitor Pattern....
Course List Reminder ...
visiting Course ....
Implementing Iterator pattern ....
Course CSE870
Solution for CSE870
Course CSE900
Solution for CSE900
Course CSE980
Solution for CSE980

```

Input set: Username: **Pepe** Password: **1111** Course Menu: **Low level Course menu**



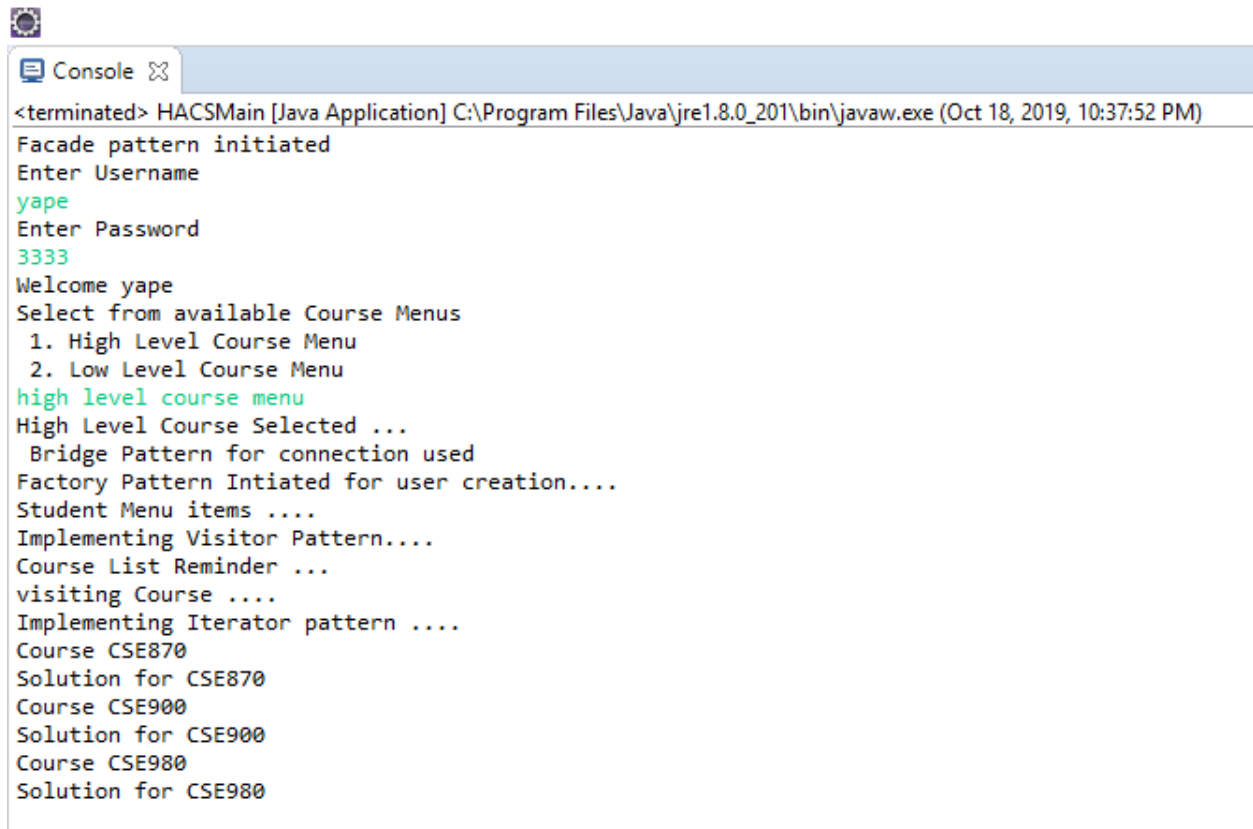
```
Console [X]
<terminated> HACSMMain [Java Application] C:\Program Files\Java\jre1.8.0_201\bin\javaw.exe (Oct 18, 2019, 10:34:19 PM)
Facade pattern initiated
Enter Username
pepe
Enter Password
1111
Welcome pepe
Select from available Course Menus
  1. High Level Course Menu
  2. Low Level Course Menu
Low level Course menu
Low Level Course Selected ...
  Bridge Pattern for connection used
Factory Pattern Initiated for user creation....
Student Menu items ....
Implementing Visitor Pattern....
Course List Reminder ...
visiting Course ....
Implementing Iterator pattern ....
Course CSE870
Solution for CSE870
Course CSE900
Solution for CSE900
Course CSE980
Solution for CSE980
```

Input set: Username: **Yaya** Password: **2222** Course Menu: **Low level Course menu**



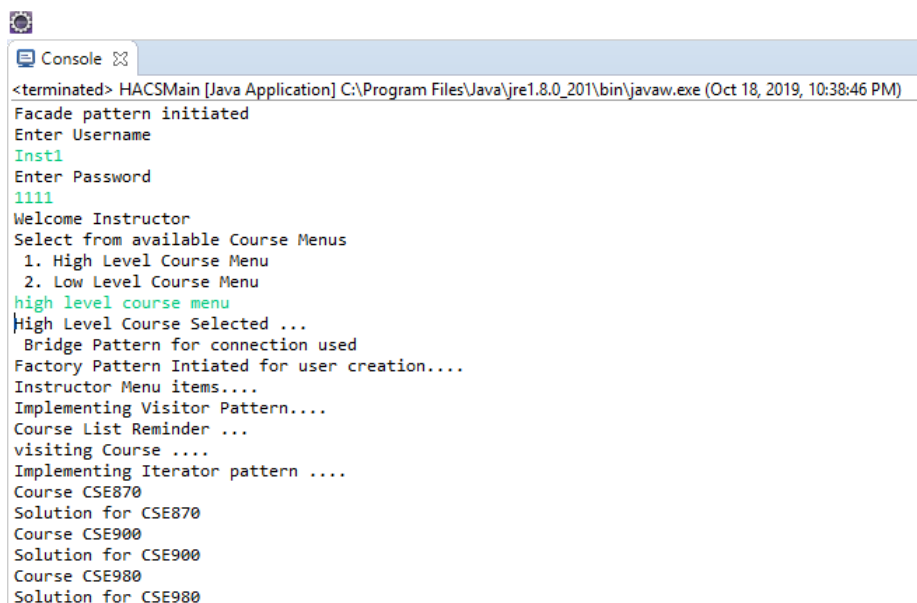
```
Console [X]
<terminated> HACSMMain [Java Application] C:\Program Files\Java\jre1.8.0_201\bin\javaw.exe (Oct 18, 2019, 10:36:36 PM)
Facade pattern initiated
Enter Username
yaya
Enter Password
2222
Welcome yaya
Select from available Course Menus
  1. High Level Course Menu
  2. Low Level Course Menu
low level course menu
Low Level Course Selected ...
  Bridge Pattern for connection used
Factory Pattern Initiated for user creation....
Student Menu items ....
Implementing Visitor Pattern....
Course List Reminder ...
visiting Course ....
Implementing Iterator pattern ....
Course CSE870
Solution for CSE870
Course CSE900
Solution for CSE900
Course CSE980
Solution for CSE980
```

Input set: Username: Yape Password: 3333 Course Menu: high level Course menu



```
<terminated> HACSMain [Java Application] C:\Program Files\Java\jre1.8.0_201\bin\javaw.exe (Oct 18, 2019, 10:37:52 PM)
Facade pattern initiated
Enter Username
yape
Enter Password
3333
Welcome yape
Select from available Course Menus
  1. High Level Course Menu
  2. Low Level Course Menu
high level course menu
High Level Course Selected ...
  Bridge Pattern for connection used
Factory Pattern Initiated for user creation....
Student Menu items ....
Implementing Visitor Pattern....
Course List Reminder ...
visiting Course ....
Implementing Iterator pattern ....
Course CSE870
Solution for CSE870
Course CSE900
Solution for CSE900
Course CSE980
Solution for CSE980
```

Input set: Username: Inst1 Password:1111 Course Menu: high level Course menu



```
<terminated> HACSMain [Java Application] C:\Program Files\Java\jre1.8.0_201\bin\javaw.exe (Oct 18, 2019, 10:38:46 PM)
Facade pattern initiated
Enter Username
Inst1
Enter Password
1111
Welcome Instructor
Select from available Course Menus
  1. High Level Course Menu
  2. Low Level Course Menu
high level course menu
High Level Course Selected ...
  Bridge Pattern for connection used
Factory Pattern Initiated for user creation....
Instructor Menu items....
Implementing Visitor Pattern....
Course List Reminder ...
visiting Course ....
Implementing Iterator pattern ....
Course CSE870
Solution for CSE870
Course CSE900
Solution for CSE900
Course CSE980
Solution for CSE980
```

Input set: Username: **Inst1** Password: **1111** Course Menu: **high level Course menu**



```
Console [X]
<terminated> HACSMMain [Java Application] C:\Program Files\Java\jre1.8.0_201\bin\javaw.exe (Oct 18, 2019, 10:41:22 PM)
Facade pattern initiated
Enter Username
inst1
Enter Password
1111
Welcome Instructor
Select from available Course Menus
  1. High Level Course Menu
  2. Low Level Course Menu
low level course menu
Low Level Course Selected ...
  Bridge Pattern for connection used
Factory Pattern Initiated for user creation....
Instructor Menu items....
Implementing Visitor Pattern....
Course List Reminder ...
visiting Course ....
Implementing Iterator pattern ....
Course CSE870
Solution for CSE870
Course CSE900
Solution for CSE900
Course CSE980
Solution for CSE980
```

Input set: Username: **Instr1** Password: **1111** **BAD USER Application terminates (Credential not matched)**



```
Console [X]
<terminated> HACSMMain [Java Application] C:\Program Files\Java\jre1.8.0_201\bin\javaw.exe (Oct 18, 2019, 10:40:21 PM)
Facade pattern initiated
Enter Username
instr1
Enter Password
1111
Bad User
```

Input set: Username: **Inst1** Password:**1111** Course Menu: **low lvl menu**

Wrong Menu Selection Application Terminates



```
Console
<terminated> HACSMMain [Java Application] C:\Program Files\Java\jre1.8.0_201\bin\javaw.exe (Oct 18, 2019, 10:42:32 PM)
Facade pattern initiated
Enter Username
inst1
Enter Password
1111
Welcome Instructor
Select from available Course Menus
  1. High Level Course Menu
  2. Low Level Course Menu
low lvl menu
Wrong Selection
```