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| Refactoring Documentation for Project “Minesweeper – 5”Team "Minesweeper-3"  1. Providing a new Solution folder. 2. Separating the project into three main subprojects.   2.1 Class Library Application  2.2 Console Client Application  2.3 Unit Test Application   1. Dividing the game classes into separate files, stored into the Class Library Application project 2. Separating the static methods into new static class 3. Refactoring MinesInitializer class main methods - > PlayGame method (removing goto command) 4. Providing refactoring and code comments 5. MinesInitializer class refactored according to Singleton design pattern. 6. private static MinesInitializer onlyInstance field contains the only instance of the class 7. private MinesInitializer() disables external instantiation of the class 8. public static MinesInitializer Instance() creates the only instance with lazy loading and returns it to the clients 9. Basic interfaces created    1. IScoreBoard for the score board implementations    2. IMinesGenerator for the random mines generator implementations    3. IMinesGenerator.FillWithRandomMines(…) generates the mines using random deployment algorithm    4. IDrawer for the UI related operations    5. IMinesweeperFactory for the game factory; through this interface implementations of the ones above must be obtained 10. IMinesweeperFactory implements the “Abstract factory” design pattern 11. public class MinesGenerator : IMinesGenerator is the generator of mines used by the game 12. class ScoreBoard : IScoreBoard moved to dedicated folder 13. interface IDrawer defined:     1. void ShowWelcome(string message) displays the game start message and instructions.     2. void ShowGameEnd(string message) displays the game end message.     3. void Draw(string[,] minesField, bool revealMines = false) renders the mines field to the UI     4. void Message(string message) displays message to the user. 14. class ConsoleDrawer : IDrawer introduced. It renders the game output to text console. 15. void PrintInitialMessage() moved: class InitializerExtensions -> class MinesInitializer 16. public static void InitializerExtensions.Display(string[,] minesMatrix, bool boomed) commented out as unnecessary 17. MinesInitializer.StartPlayCycle() refactored to use IDrawer 18. MinesInitializer.PrintInitialMessage() refactored to use IDrawer 19. Interface IUserInput introduced. It is the generic interface for retrieval of user input.     1. string GetCommand() returns user input as string.     2. string GetUserName() returns the user’s name. 20. public class ConsoleInput : IUserInput introduced. It retrieves the user input from text console. 21. MinesInitializer.EnterRowColInput() refactored to use IUserInput 22. InitializerExtensions.StartGame() commented out: method no longer needed. Initialization of class fields moved to MinesInitializer.StartPlayCycle() 23. InitializerExtensions.FillWithRandomMines() commented out: method no longer needed. Its functionality taken over by IMinesGenerator implementations. 24. InitializerExtensions.IsMoveEntered(string line) refactored to InitializerExtensions.IsMoveEntered (string line, ref int row, ref int column) 25. MinesInitializer.EnterRowColInput() updated accordingly. 26. MinesInitializer.EnterRowColInput() refactored to use IDrawer entirely. 27. IUserInput GetCommandProvider() added to IMinesweeperFactory 28. class MinesweeperFactory : IMinesweeperFactory introduced. It is the factory of the game. 29. MinesInitializer.PlayMines() refactored to MinesInitializer.PlayMines(IMinesGenerator minesGenerator, IDrawer drawer, IUserInput userInput, IScoreBoard scoreBoard, Random random) 30. private Random random introduced to MinesInitializer 31. Main() updated to use object factory to create all necessary instances. 32. Random randomMines; deleted from StartPlayCycle() 33. StartPlayCycle() updated to use random field instead 34. MinesGenerator minesGenerator removed from StartPlayCycle() 35. drawer = new ConsoleDrawer() removed 36. this.userInput = new ConsoleInput() removed 37. void PrintScoreBoard(IList<KeyValuePair<int, IList<string>>> highScores) introduced to IDrawer 38. ConsoleDrawer.PrintScoreBoard() implemented 39. ScoreBoard.cs moved to MinesweeperGame.Demo 40. MinesGenerator.cs moved to MinesweeperGame.Demo 41. ScoreBoard.PrintScoreBoard() removed method no longer needed 42. EnterRowColInput(…) updated to use IDrawer.PrintScoreBoard() 43. ScoreBoard.AddPlayer() fix: parameter validation bug 44. EnterRowColInput(…) fix: discard blank user names 45. MediatorExtensions.cs: constants made public 46. MinesGenerator.cs: constant name fix MinesSymbol -> MINES\_SYMBOL |
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