**Labyrinth game documentation:**

1. Code formatted – formatted curly brackets, removed empty lines and put lines where necessary. Extracted class ScoreBoard in different file and renamed to PlayerScore.

2. Introduced properties Name and Moves for fields name and moves in the PlayerScore class.

3. Introduced ScoreBoard class, which will show (introduce) the top scores to the player.

4. Introduced Maze class, which will hold the state of the labyrinth at any time.

5. Introduced IMaze interface, which the methods to be implemented by Labyrinth class.

6. Introduced abstract class Cell (with ICell interface with all essential methods) and his inheritors MazeCell and Player (IPlayer interface with all essential methods) classes. Lab cell holds the state of any cell and the Player class holds the state of the Player. It can be moved with the Move method taking as a parameter the CommandExecutioner class implemented by its interface.

7. Introduced CommandListener class and ICommander interface whicl will manipulate the player’s input.

8. Removed method HasSolution from the ILabyrinth interface and made HasSolution a private method in the Labyrinth class.

9. Introduced GameEngine class with Start method to be implemented.

10. Renamed kursov-proekt (Program) class and project name to LabyrinthGame.

11. Moved AddScore method from the main class to ScoreBoard class, making it from static to instance.

12. Extracted sorting of the score list into different private SortScore method in ScoreBoard class

13. Replaced List<ScoreBoard> scores with ScoreBoard scores and replaced ShowScoreBoard method with scores.ShowScore() in Labyrinth3Game class.

14. Introduced PlayerScore currentPlayerScore variable.

15. Removed from currentMoves global variable in Labyrinth3Game class and replaced it with currentPlayer.Moves.

16. In AddScore method in the ScoreBoard class the player score name input is kept directly in the name of the current instance of the player.

17. Introduced MAX\_SCORELIST\_SIZE constant in the ScoreBoard class.

18. Renamed variable in ShowScore method in the ScoreBoard class from i to playerPosition.

19. Moved the remaining game logic to the GameEngine class (content of main placed in the Start method) for being reallocated later.

20. Introduced new constants INITIAL \_POSITION in the Labyrinth class to keep the starting position of the player.

21. Moved SolutionChecker method content to the private method HasSolution method in the Labyrinth class.

22. LabyrinthGenerator method move to GenerateMaze method in MazeClass

23. Maze initialized as matrix of type Lab instead of string.

24. GameEngine.Start method cleared from maze methods. Created Player player and Maze labyrinth variables.

25. Classes reallocated to namespaces.

26. Removed PlayerScore instance and assigned property Score of type PlayerScore to Player class.

27. Extracted method PrintHighScores to print the scores if the player is out of the maze

28. Removed reapeated code in TypeCommand method.

29. Introduced enumeration Direction with all directions for the player to move (Up,Down,Left and Right).

30. Introduced message constants:

31. Introduced static class renderer, responsible for rendering (drawing) on the console.

32. Replaced all magic strings and numbers and defined as constants in the corresponding class.

33. Renamed variable s in AddScore method in the ScoreBoard class to currentPlayer and renamed variables s1 and s2 in SortScores method in the ScoreBoard class respectively to currentPlayer and otherPlayer.

34. Removed all the rendering (printing) in the Renderer class. All renderable objects implement IRenderable interface and the Render method. The game object should not now how they will be rendered for better coupling as well as the renderer does not care what will render. The game objects can be rendered with other implementation easily and objects can be added for rendering through the IRenderable interface.

35. Replaced Move method to Player class with the next cell checker altogether.

36. All renderable objects’ render methods receive particular IRenderer implementation as argument. It can be easily replaced with other implementation of the IRenderer. Strategy design pattern implementation.

37. Rendering the Maze renders each cell of it. Maze and the cells have tree-like structure. Same with rendering the score list (each score item is rendered). Composite pattern implementation.

38. Maze solution checker method refactored to recursive solution for easier comprehension.

39. Implemented Factory pattern for creating Maze objects. LabCreator is an abstract class which Is derived by the LargeLabCreator, MediumLabCreator, SmallLabcreator. Based on the user’s input is deterimined what size of maze is created. The sizes of the three different mazes are constant fields in the corresponding classes.

40. Some changes to Maze class. Its constructor now takes only two arguments – the two sizes of the matrix of the labyrinth, based on which Is set the initial position (PlayerInitialPosition {get; private set;}) of the player, which is always in the middle of the matrix.

41. Some changes to the in game messages;

42. Implemented Cell and Player creator classes. Implemented prototype pattern for cloning the MazeCells and cloning them in the cell factory.

43. Rename ‘choise’ to ‘labSizeChoice’, classes ‘GameEngine’ to ‘LabyrnithGame’ and ‘LabyrinthGame’ to ‘GameMain’.

44. All the logic for generating and checking the maze moved to the MazeCreator class… used singleton pattern for creating a maze… only one instance of the maze can be created at a time.

45. Implemented Observer pattern: when changed, player.Direction setter invokes the Move method immediately . Player move method changed to private.

46. LabyrnithGame class serves as a facade for the entire game logic. (Facade pattern)

47. Implemented Command pattern… the Commander class invokes all the Command class… three command implementations.. MoveCommand, PrintCommand and MazeCreateCommand, all of them inherit the Command abstract class. The player is the receiver of the concrete command and executes it through the commander.

48. Many things in the LabGame class refactored so I cannot recall all the things I have changed…

49. Created tests.

50. Added some exceptions of the Position, Cell and PlayerScore classes recommended by previously made tests. (Test Driven Development).

51. Created class CommandCreator and ScoreBoardCreator classes in the factory to create instances of respectively ICommand and the IScoreBoard objects. The game engine now depends on the Factory and the Interfaces namespaces.