

CSE 112 Final

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I. QUESTION (3 POINTS)

Declare an enumerated class **QuestionType** that has the values TRAFIK, MOTOR, and ILK_YARDIM.

II. QUESTION (3 POINTS)

The class **WrongChoice** extends Exception and give a message about wrong choice. The class **WrongChoice** contains:

- (2 pts) One argument constructor **WrongChoice(String choice)**.
- (1 pt) **String toString()** method to print the exception message.

III. QUESTION (23 POINTS)

Declare a class named **Question** that represents a question in a multiple choice traffic exam. The class **Question** contains:

- (2 pts) A private string data field named **questionText**, a private **QuestionType** data field named **questionType**.
- (1 pt) An array of 4 strings private field named **choices** that represent the possible choices the user have.
- (1 pt) A private string field named **correctChoice** that represents the answer to the question and can have only the values A, B, C, D.
- (6 pts) A constructor with parameters **questionText**, **questionType**, **choices**, and **correctChoice**. The constructor will throw **WrongChoice** exception if the **correctChoice** is wrong.
- (1 pt) Getter method for **questionType**.
- (5 pts) A method **void displayQuestion()** which prints the question to the screen.
- (1 pt) A method **boolean isCorrect(String answer)** checks if the **answer** is correct or not.
- (6 pts) A method that implements **compareTo**. Two questions are compared as follows. First their question types are compared. If they are equal, their question texts are compared. Use **compareTo** method of strings to compare two strings.

IV. QUESTION (33 POINTS)

Declare a class named **Exam** that represents a multiple choice traffic exam. The class **Exam** contains:

- (1 pt) An array list of **Question** that represents the questions in the exam.
- (14 pts) A constructor with parameter **fileName** which reads the multiple choice exam from a file named **fileName**. The first line of the file contains the number of questions N in the exam. Each of the following N lines contains the type of the question T, M, or I; the text of the question; the four choices to the question; the correct answer to the question A, B, C, or D.

- (6 pts) A method **void sortQuestions()** that sorts the questions using the **compareTo** method. Do not use a predefined method.
- (12 pts) A method **applyExam()** which shows the user all questions one by one, get the answer from the user and displays the number of correct answers in each question type to the user.

V. QUESTION (3 POINTS)

Declare an abstract class named **Piece** that represents a piece in a checkers game. A piece has:

- (1 pt) Protected string field **color** that represents the color of the piece.
- (1 pt) A constructor with parameter **color**.
- (1 pt) An abstract method **boolean canMove(Board board, int fromX, int fromY, int toX, int toY)**.

VI. QUESTION (11 POINTS)

Declare a class **Board** that represents the checkered game board. It is an 8×8 board and only the dark squares of the checkered board are used. The first three lines are covered by white pieces and the last three lines are covered by black pieces. Class **board** contains

- (1 pt) A two-dimensional board named **board** of Piece type.
- (9 pts) A constructor which places the pieces on the board.
- (1 pt) A method **Piece getPiece(int x, int y)** which returns the piece on the position x and y .

VII. QUESTION (24 POINTS)

Declare two classes **Men** and **King** which extend class **Piece**. Men can only play diagonal forward, can capture by jumping over opponent piece diagonally. King can play diagonal forward or backward, can capture by jumping over opponent piece diagonally.

- (12 pts) Implement Men.
- (12 pts) Implement King.