Sport Prediction System

Generated by Doxygen 1.9.1

1	Hierarchical Index	1
	1.1 Class Hierarchy	1
2	Class Index	3
	2.1 Class List	3
3	Class Documentation	5
	3.1 CSVReader< M, P > Class Template Reference	5
	3.1.1 Member Function Documentation	5
	3.1.1.1 GetMatchDataFromCsvFile()	5
	3.2 CSVWriter< M, P > Class Template Reference	6
	3.3 EmailService Class Reference	6
	3.3.1 Detailed Description	6
	3.3.2 Constructor & Destructor Documentation	6
	3.3.2.1 EmailService()	6
	3.3.3 Member Function Documentation	7
	3.3.3.1 SendEmail()	7
	3.4 FootballMatch Class Reference	7
	3.5 FootballMatchFactory Class Reference	8
	3.6 FootballPrediction Class Reference	8
	3.7 IMatchFactory< M > Interface Template Reference	9
	3.8 IMemberData < M, P > Interface Template Reference	9
	3.9 Match Class Reference	10
	3.9.1 Detailed Description	10
	3.10 Member < M, P > Class Template Reference	11
	3.10.1 Detailed Description	
	3.10.2 Member Function Documentation	12
	3.10.2.1 SearchPredictionDone()	12
	3.10.3 Member Data Documentation	13
	3.10.3.1 Scores	13
	3.11 Prediction Class Reference	13
	3.12 PredictionGame Class Reference	14
	3.12.1 Detailed Description	14
	3.13 Schedule M > Class Template Reference	14
	3.13.1 Detailed Description	15
	3.14 Score Class Reference	15
	0.11 00010 01000 1 1010101100	10

# **Chapter 1**

# **Hierarchical Index**

## 1.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

$CSVReader < M, P > \dots $	5
CSVWriter< M, P >	6
EmailService	6
$MatchFactory < M > \ \ldots \ldots$	ç
MatchFactory< FootballMatch >	9
FootballMatchFactory	. 8
$\label{eq:memberData} \mbox{MemberData} < \mbox{M, P} > \ \dots \$	ç
$Member{<}M,P{>}\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$	. 11
Match	10
FootballMatch	. 7
Prediction	13
FootballPrediction	. 8
PredictionGame	14
$Schedule < M > \ldots \ldots \ldots \ldots \ldots \ldots$	14
Score	15

2 Hierarchical Index

# Chapter 2

# **Class Index**

## 2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

CSVReader< M, P >	5
CSVWriter< M, P >	6
EmailService	
Provides functionality to send emails using SMTP	6
FootballMatch	7
FootballMatchFactory	8
FootballPrediction	
MatchFactory < M >	9
MemberData < M, P >	9
Match	
Abstract match class to set a frame for sport-specific kinds of matches	10
Member < M, P >	
Represents a member participating in the Sport Prediction System (SPS)	11
Prediction	13
PredictionGame	
Represents a prediction game in the Sport Prediction System (SPS)	14
Schedule < M >	
Generic class Schedule which represents a tournament	14
Score	15

4 Class Index

## **Chapter 3**

## **Class Documentation**

## 3.1 CSVReader < M, P > Class Template Reference

#### **Public Member Functions**

- List< Member< M, P >> GetMemberDataFromCsvFile (string PathToCsvFile)
- void **GetScoresFromCsvFile** (string PathToCsvFile, PredictionGame prediction\_game)
- void GetFootballPredictionsFromCsvFile (string PathToCsvFile, PredictionGame prediction\_game, Schedule < FootballMatch > schedule)

#### **Static Public Member Functions**

- static void SetMatchFactory (IMatchFactory < M > match\_factory)
- static string[] GetMatchDataFromCsvFile (string PathToMatchDataCsvFile, int line\_number)
   Reads the match data from a CSV file.
- static List< M > GetScheduleFromCsvFile (string PathToCsvFile, SportsTypes sport\_type)

## 3.1.1 Member Function Documentation

## 3.1.1.1 GetMatchDataFromCsvFile()

Reads the match data from a CSV file.

#### **Parameters**

PathToMatchDataCsvFile	The path to the CSV file containing match data.	
MatchID	The unique identifier of the match.	

#### Returns

An array of strings containing the match data.

The documentation for this class was generated from the following file:

• src/ClassLib/CSVReader.cs

## 3.2 CSVWriter < M, P > Class Template Reference

#### **Static Public Member Functions**

- static void **UpdateSchedule** (string PathToCsvFile, List< M > schedule)
- static void **DeleteFile** (string PathToCsvFile)
- static void WriteMemberData (string PathToCsvFile, PredictionGame prediction game)
- static void **TrackScoreData** (string PathToCsvFile, PredictionGame prediction game)
- static void TrackFootballPredictionData (string PathToCsvFile, PredictionGame prediction\_game)

The documentation for this class was generated from the following file:

• src/ClassLib/CSVWriter.cs

## 3.3 EmailService Class Reference

Provides functionality to send emails using SMTP.

## **Public Member Functions**

• EmailService ()

Initializes a new instance of the EmailService class.

void SendEmail (string Recipient, string Sender, string Subject, string Template, Dictionary < string, string > placeholders)

Sends an email.

## 3.3.1 Detailed Description

Provides functionality to send emails using SMTP.

#### 3.3.2 Constructor & Destructor Documentation

#### 3.3.2.1 EmailService()

EmailService.EmailService ( ) [inline]

Initializes a new instance of the EmailService class.

#### **Parameters**

smtpServer	The SMTP server address.
smtpPort	The SMTP server port.
username	The username for SMTP authentication.
password	The password for SMTP authentication.

#### 3.3.3 Member Function Documentation

#### 3.3.3.1 SendEmail()

```
void EmailService.SendEmail (
    string Recipient,
    string Sender,
    string Subject,
    string Template,
    Dictionary< string, string > placeholders ) [inline]
```

#### Sends an email.

#### **Parameters**

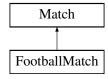
recipient	The recipient's email address.
subject	The subject of the email.
content	The content of the email.

The documentation for this class was generated from the following file:

• src/ClassLib/EmailService.cs

## 3.4 FootballMatch Class Reference

Inheritance diagram for FootballMatch:



## **Public Member Functions**

FootballMatch ()

Parameter free constructor to use generic type M in CSVReader

- FootballMatch (string PathToMatchDataCsvFile, int line\_number, SportsTypes sport\_type)
- override string ToString ()

## **Properties**

- string? HomeTeam [get]
- string? AwayTeam [get]
- byte? ResultHomeTeamPenalties [get]
- byte? ResultAwayTeamPenalties [get]

The documentation for this class was generated from the following file:

· src/ClassLib/FootballMatch.cs

## 3.5 FootballMatchFactory Class Reference

Inheritance diagram for FootballMatchFactory:



#### **Public Member Functions**

• FootballMatch CreateMatch (string PathToMatchDataCsvFile, int line\_number, SportsTypes sport\_type)

The documentation for this class was generated from the following file:

· src/ClassLib/MatchFactory.cs

## 3.6 FootballPrediction Class Reference

Inheritance diagram for FootballPrediction:



## **Public Member Functions**

- FootballPrediction (uint MemberID, FootballMatch football\_match, DateTime predictionDate, byte prediction\_home, byte prediction\_away)
- void ChangePrediction (byte? NewPredictionHome, byte? NewPredictionAway)
- override string ToString ()

## **Properties**

```
string? HomeTeam [get]
string? AwayTeam [get]
byte PredictionHome [get, protected set]
byte PredictionAway [get, protected set]
```

The documentation for this class was generated from the following file:

· src/ClassLib/FootballPrediction.cs

## 3.7 IMatchFactory < M > Interface Template Reference

#### **Public Member Functions**

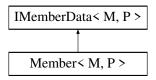
• M CreateMatch (string PathToMatchDataCsvFile, int line\_number, SportsTypes sport\_type)

The documentation for this interface was generated from the following file:

src/ClassLib/MatchFactory.cs

## 3.8 IMemberData < M, P > Interface Template Reference

Inheritance diagram for IMemberData < M, P >:



#### **Public Member Functions**

- string GetForename ()
- string GetEmailAddress ()
- List< M > GetPredictionsToDo ()
- List< P > GetPredictionsDone ()
- void SetPredictionsDone (List< P > done\_predictions)
- List< P > GetArchivedPredictions ()
- void SetArchivedPredictions (List< P > archived\_predictions)
- List < Score > GetScores ()
- void SetScores (List< Score > scores)

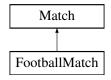
The documentation for this interface was generated from the following file:

• src/ClassLib/Member.cs

## 3.9 Match Class Reference

Abstract match class to set a frame for sport-specific kinds of matches.

Inheritance diagram for Match:



#### **Public Member Functions**

- override int GetHashCode ()
- bool Team1Won ()
- bool Team2Won ()
- bool Tie ()

## **Properties**

```
• uint MatchID [get, protected set]

Unique identifier for the match.
```

• DateTime MatchDate [get, protected set]

Date and time when the match takes place.

• byte? ResultTeam1 [get, protected set]

Result of team 1 in the match.

• byte? ResultTeam2 [get, protected set]

Result of team 2 in the match.

- SportsTypes SportsType [get, protected set]
- string[] MatchArray [get, protected set]

## 3.9.1 Detailed Description

Abstract match class to set a frame for sport-specific kinds of matches.

This class provides the basic structure for any kind of sports match, including common properties like MatchID, MatchDate, and Results.

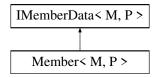
The documentation for this class was generated from the following file:

· src/ClassLib/Match.cs

## 3.10 Member < M, P > Class Template Reference

Represents a member participating in the Sport Prediction System (SPS).

Inheritance diagram for Member < M, P >:



#### **Public Member Functions**

string GetForename ()

Retrieves the forename of the member.

string GetEmailAddress ()

Retrieves the email address of the member.

List< M > GetPredictionsToDo ()

Retrieves a copy of the list of matches that need to be predicted.

List< P > GetPredictionsDone ()

Retrieves a copy of the list of the predicitons already done, but not yet archived.

- void SetPredictionsDone (List< P > done predictions)
- List< P > GetArchivedPredictions ()

Retrieves a copy of the list of archived predictions.

- void SetArchivedPredictions (List< P > archived\_predictions)
- List < Score > GetScores ()

Retrieves a copy of the scores list.

- void SetScores (List < Score > scores)
- · Member (string forename, string surname, string emailaddress, string password)

Initializes a new instance of the Member class.

- · Member (uint member\_id, string forename, string surname, string emailaddress, string password)
- override int GetHashCode ()
- void AddParticipatingSchedule (Schedule < M > schedule, Schedule Types schedule type)

Adds a schedule to the member's list of participating schedules.

void RemoveParticipatingSchedule (ScheduleTypes schedule\_type)

Removes a schedule from the member's list of participating schedules.

void AddPredictionToDo ()

Adds a prediction to the member's list of predictions to do.

void RemovePredictionToDo (uint MatchID)

Removes a match from the member's list of PredictionsToDo.

void ConvertPredictionsDone (uint MatchID, byte prediction\_home, byte prediction\_away)

If user has predicted a certain match (specified by MatchID), a new prediction will be created (Prediction ctor call) and will be added to the PredictionsDone-list.

Prediction SearchPredictionDone (uint PredictionID)

Searches for a specific prediction in the member's list.

• void RemovePredictionsDone (uint PredictionID)

Removes a prediction from the member's list of PredictionsDone.

- void CalculateScores ()
- override string ToString ()

#### **Protected Attributes**

List< M > PredictionsToDo

List of Matches, which need to be predicted on the specific day.

• List< P > PredictionsDone

List, which contains all Predictions where the match is already predicted, but a score was not calculated yet.

• List< P > ArchivedPredictions

List, which contains all Predictions where no score must be calculated anymore.

• List< Score > Scores

List of Scores.

## **Properties**

```
• uint MemberID [get]
```

Gets the unique ID of the member.

```
• string? Forename [get, set]
```

- string? **Surname** [get, set]
- string EmailAddress [get]
- string Password [get]
- List< Schedule< M > > ParticipatingSchedules [get]

List of Schedules the member chose to participate predicting.

## 3.10.1 Detailed Description

Represents a member participating in the Sport Prediction System (SPS).

**Type Constraints** 

P: Prediction
M: Match

#### 3.10.2 Member Function Documentation

## 3.10.2.1 SearchPredictionDone()

Searches for a specific prediction in the member's list.

Returns

The prediction if found, otherwise null.

## 3.10.3 Member Data Documentation

#### 3.10.3.1 Scores

```
List<Score> Member< M, P >.Scores [protected]
```

List of Scores.

There is exactly one score for every schedule the member predicts.

The documentation for this class was generated from the following file:

• src/ClassLib/Member.cs

## 3.11 Prediction Class Reference

Inheritance diagram for Prediction:



#### **Public Member Functions**

- Prediction (uint member\_id, Match predicted\_match, DateTime predictionDate)
- bool ValidatePrediction ()
- override int GetHashCode ()
- override string ToString ()

## **Properties**

- uint **PredictionID** [get]
- uint **MemberID** [get]
- Match PredictedMatch [get]
- DateTime PredictionDate [get, protected set]

The documentation for this class was generated from the following file:

• src/ClassLib/Prediction.cs

#### 3.12 PredictionGame Class Reference

Represents a prediction game in the Sport Prediction System (SPS).

#### **Public Member Functions**

• PredictionGame (EmailService emailService)

Initializes a new instance of the PredictionGame class.

• override int GetHashCode ()

Get a unique Hashcode -> PredictionGameIDCounter necassary for generation.

void Register (Member < Match, Prediction > member)

Registers a new member to the prediction game.

• void Unsubscribe (int MemberID)

Unsubscribes a member from the prediction game.

void SendDailyEmail ()

Sends a daily email to all members with the matches that need to be predicted.

## **Properties**

```
• uint PredictionGameID [get]
```

Gets the unique ID of the prediction game.

- List< Member< Match, Prediction >> Members [get, set]
- List < ScheduleTypes > ScheduleTypesList [get]

#### 3.12.1 Detailed Description

Represents a prediction game in the Sport Prediction System (SPS).

The documentation for this class was generated from the following file:

• src/ClassLib/PredictionGame.cs

## 3.13 Schedule < M > Class Template Reference

Generic class Schedule which represents a tournament.

#### **Public Member Functions**

- Schedule (string PathToCsvFile, SportsTypes sport\_type, ScheduleTypes schedule\_type)
- List< FootballMatch > GetFootballScheduleFromCsvFile (string PathToCsvFile, SportsTypes sport\_type)
- List< M > GetMatchesOnDay ()

## **Properties**

- ScheduleTypes ScheduleID [get]
- List< M >? Matches [get]

3.14 Score Class Reference 15

## 3.13.1 Detailed Description

Generic class Schedule which represents a tournament.

It contains a list of all the matches which take place during the tournament.

Added to that it also contains a list of all the matches on the specific day of the tournament.

**Type Constraints** 

M: Match

The documentation for this class was generated from the following file:

• src/ClassLib/Schedule.cs

## 3.14 Score Class Reference

#### **Public Member Functions**

- Score (ScheduleTypes predicted\_schedule)
- Score (ScheduleTypes predicted\_schedule, uint amount\_of\_points)
- void IncrementAmountOfPoints (uint points)
- uint CalculateFootballScore (FootballPrediction prediction)
- override string ToString ()

## **Properties**

- ScheduleTypes ScoreID [get]
- uint AmountOfPoints [get, set]

The documentation for this class was generated from the following file:

• src/ClassLib/Score.cs