

Μετρικές Λογισμικού

Lines of Code (LoC):

Total : 54 files, **4683 codes**, 182 comments, 788 blanks, all 5653 lines

Total (Frontend) : 40 files, **3602 codes**, 115 comments, 352 blanks, all 4069 lines

Total (Backend) : 9 files, **729 codes**, 66 comments, 314 blanks, all 1109 lines

Total (Database) : 3 files, **310 codes**, 1 comments, 115 blanks, all 426 lines

With the help of VS Code's Extension called "VS Code Counter"

Total:

Summary						
Date : 2024-01-17 15:44:10						
Directory c:\Users\USER\Desktop\SE_Assignment						
Total : 54 files, 4683 codes, 182 comments, 788 blanks, all 5653 lines						
Summary / Details / Diff Summary / Diff Details						
Languages						
language	files	code	comment	blank	total	
Svelte	24	2,051	63	279	2,393	
JSON	4	1,121	0	3	1,124	
Python	6	588	65	233	886	
SQL	2	302	1	112	415	
CSS	1	236	29	30	295	
Markdown	6	219	0	109	328	
JavaScript	4	122	4	13	139	
JSON with Comments	1	15	17	1	33	
HTML	1	13	0	2	15	
Shell Script	1	9	1	4	14	
pip requirements	1	5	0	1	6	
XML	2	2	0	0	2	
TypeScript	1	0	2	1	3	

Backend:

Summary						
Date : 2024-01-17 16:18:04						
Directory c:\Users\USER\Desktop\SE_Assignment\backend						
Total : 9 files, 729 codes, 66 comments, 314 blanks, all 1109 lines						
Summary / Details / Diff Summary / Diff Details						
Languages						
language	files	code	comment	blank	total	
Python	6	588	65	233	886	
Markdown	1	127	0	76	203	
Shell Script	1	9	1	4	14	
pip requirements	1	5	0	1	6	

Database:

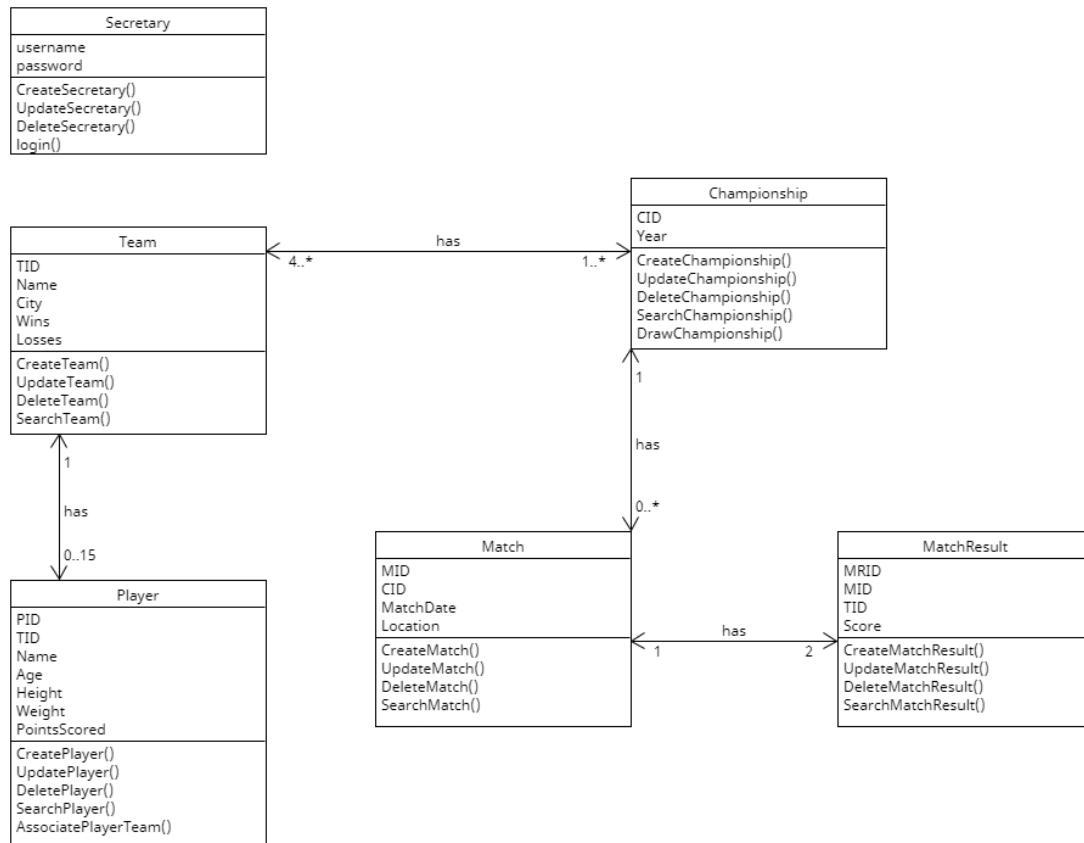
Frontend:

Summary						
Date : 2024-01-17 16:17:50						
Directory c:\Users\USER\Desktop\SE_Assignment\app						
Total : 40 files, 3602 codes, 115 comments, 352 blanks, all 4069 lines						
Summary / Details / Diff Summary / Diff Details						
Languages						
language	files	code	comment	blank	total	
Svelte	24	2,051	63	279	2,393	
JSON	4	1,121	0	3	1,124	
CSS	1	236	29	30	295	
JavaScript	4	122	4	13	139	
Markdown	2	42	0	23	65	
JSON with Comments	1	15	17	1	33	
HTML	1	13	0	2	15	
XML	2	2	0	0	2	
TypeScript	1	0	2	1	3	

Summary						
Date : 2024-01-17 16:18:20						
Directory c:\Users\USER\Desktop\SE_Assignment\database						
Total : 3 files, 310 codes, 1 comments, 115 blanks, all 426 lines						
Summary / Details / Diff Summary / Diff Details						
Languages						
language	files	code	comment	blank	total	
SQL	2	302	1	112	415	
Markdown	1	8	0	3	11	

Number of Classes (NoC):

According to our Class Diagram, we implemented 6 classes (Secretary, Team, Player, Championship, Match, MatchResult) which we inserted with MySQL directly in our Database.



Cyclomatic Complexity (CC):

With the VS Code's Extension "Codalyze" we gauged the Cyclomatic Complexity for each method in each class of our Frontend and Backend.

In more detail for each method:

Function Name	Start Line	End Line	Cyclomatic Complexity (Threshold: 10)
fetchTeams	3	16	3
fetchPlayers	18	31	3
fetchChampionships	33	46	3
fetchMatches	47	60	3
viewTeam	62	75	3
viewPlayer	77	90	3
JSON.stringify	100	114	3

Function Name	Start Line	End Line	Cyclomatic Complexity (Threshold: 10)
sqlInj	22	27	4
getChamps	32	42	2
createChamp	47	68	3
updateChampionship	73	94	3
getChampionship	99	118	3
deleteChampionship	122	139	3

Function Name	Start Line	End Line	Cyclomatic Complexity (Threshold: 10)
sqlInj	33	38	4
matchResult	41	62	5
drawChamp	67	113	5
getMatches	118	154	3
updateMatch	158	180	3
updateMR	187	208	3
winner	211	245	3
updateScore	252	273	3

Function Name	Start Line	End Line	Cyclomatic Complexity (Threshold: 10)
sqlInj	22	27	4
getPlayers	33	47	2
createPlayer	52	92	4
updatePlayer	100	138	4
getPlayer	143	166	3
deletePlayer	171	193	3

Function Name	Start Line	End Line	Cyclomatic Complexity (Threshold: 10)
sqlInj	32	37	4
login	42	68	4

Function Name	Start Line	End Line	Cyclomatic Complexity (Threshold: 10)
sqlInj	22	27	4
getTeams	34	46	2
createTeam	51	76	3
updateTeam	81	109	3
getTeam	114	136	3
deleteTeam	141	163	3

Weighted Method per Class 1 (WMPC1):

According to the tables above, we have:

- Frontend:

$$WMPC1 = 3 * 7 = 21$$

- Backend:

Class Championship: $WMPC1 = 4 + 2 + 3*4 = 18$

Class Secretary: $WMPC1 = 4*2 = 8$

Class Match: $WMPC1 = 4 + 5*2 + 3*5 = 29$

Class Player: $WMPC1 = 4*3 + 2 + 3*2 = 20$

Class Team: $WMPC1 = 4 + 2 + 3*4 = 18$

Depth of Inheritance Tree (DIT) & Number of Child Classes (NOCC):

Given that Python and SQL don't support classes and inheritance, all the "Depth of Inheritance Tree" values for all the classes should be 0 (DIT=0). And the same goes for

all the "Number of Child Classes (NOCC)" values for all the classes (NOCC=0).

Coupling Factor (CF):

According to our Class Diagram:

$$CF = \frac{\text{Number of non – inherited couplings}}{\text{Maximum possible number of couplings in the system}} = \frac{4}{15} \approx 0.27$$

Coupling Between Objects (CBO):

CBO(Secretary) = 0

CBO(Team) = 2

CBO(Player) = 1

CBO(Championship) = 2

CBO(Match) = 1

CBO(MatchResult) = 1

Fan Out (FO):

FO(Secretary) = 0

FO(Team) = 2

FO(Player) = 1

FO(Championship) = 2

FO(Match) = 1

FO(MatchResult) = 1

Fan In (FI):

FI(Secretary) = 0

FI(Team) = 2

FI(Player) = 1

FI(Championship) = 2

FI(Match) = 1

FI(MatchResult) = 1

Lack Of Cohesion of Methods 1 (LOCOM1):

- Secretary:

All methods share the same two variables (username, password), therefore $P < Q$ which means $LOCOM1 = 0$ for all methods.

- Team:

All methods (CreateSecretary(), UpdateSecretary(), DeleteSecretary, login(), logout()) share the same five variables (TID, Name, City, Wins, Losses), therefore $P < Q$ which means $LOCOM1 = 0$ for all methods.

- Player:

Most methods (CreateTeam(), UpdateTeam(), DeleteTeam(), SearchTeam()) share the same seven variables (PID, TID, Name, Age, Height, Weight, PointsScored), except for AssociatePlayerTeam, which share two variables (PID, TID) with the rest of the methods. Therefore $P < Q$ which means $LOCOM1 = 0$ for all methods.

- Championship:

All methods (CreateChampionship(), UpdateChampionship(), DeleteChampionship(), SearchChampionship(), DrawChampionship()) share the same two variables (CID, Year), therefore $P < Q$ which means LCOM1 = 0 for all methods.

- Match:

All methods (CreateMatch(), UpdateMatch(), DeleteMatch(), SearchMatch()) share the same four variables (MID, CID, MatchDate, Location), therefore $P < Q$ which means LCOM1 = 0 for all methods.

- MatchResult:

All methods (CreateMatchResult(), UpdateMatchResult(), DeleteMatchResult(), SearchMatchResult()) share the same four variables (MRID, MID, TID, Score), therefore $P < Q$ which means LCOM1 = 0 for all methods.