NBA player data comparison
(終於找到五個人)

Work distribution

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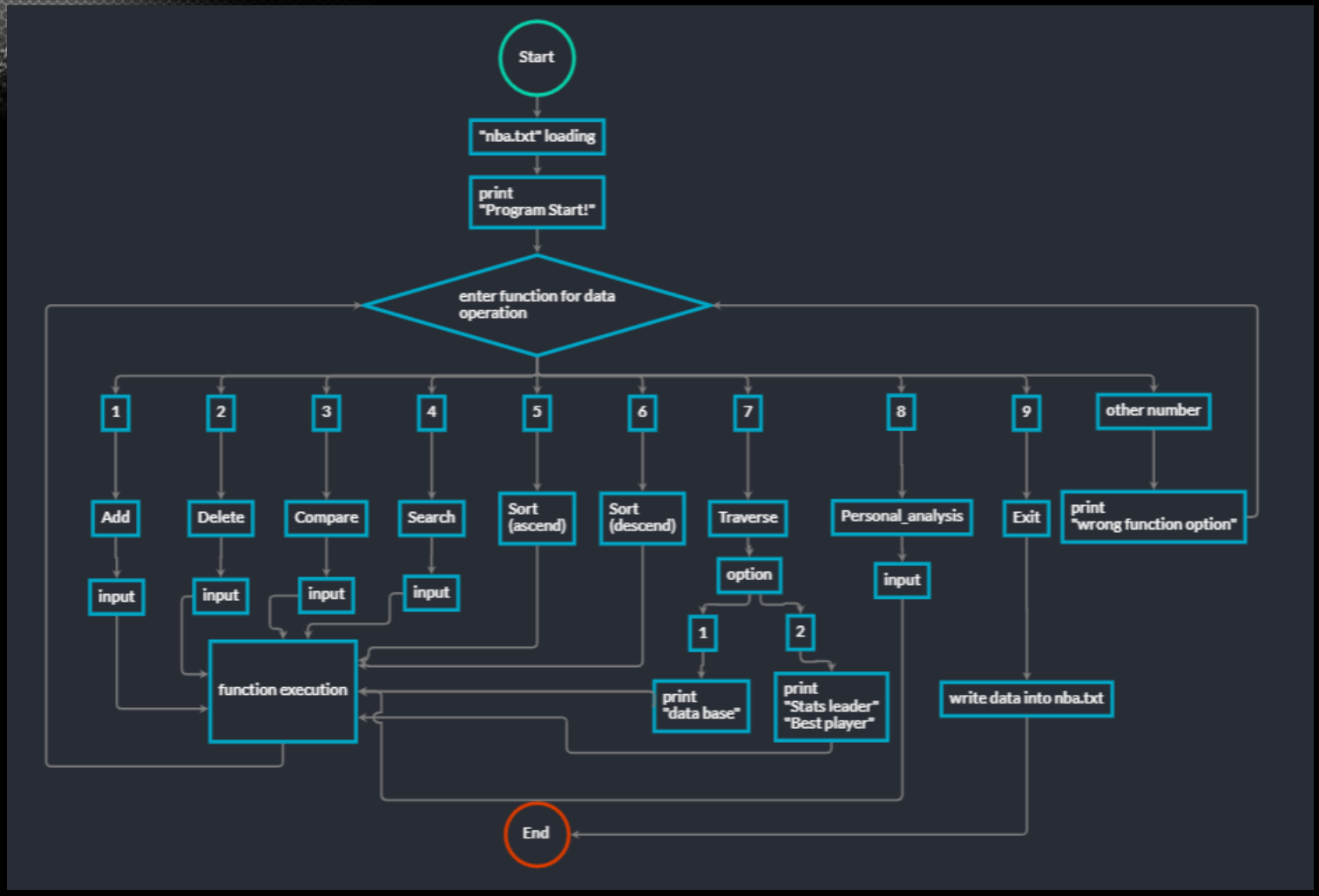
Database System Introduction

This database system is based on the purpose to compare each player's performance in NBA.

What we have done is to make a program that can deal with all the data we are interested in by controlling functions we made.

Program Design



Function Introduction

0.Background

1.Add

2.Delete

3.Compare

4.Search

5.Sort (ascend)

6.Sort (descend)

7.Traverse

8.Personal_analysis

9.Exit

0.nba.txt (~700 data) as database

Steven Adams	C	NOP	0.614	514	111	54	38	438	
Bam Adebayo	C	MIA	0.57	573	346	75	66	1197	
LaMarcus Aldridge		C	TOT	0.473	118	49	11	29	352
LaMarcus Aldridge		C	SAS	0.464	94	36	8	18	288
LaMarcus Aldridge		C	BRK	0.521	24	13	3	11	64
Jarrett Allen	C	TOT	0.618	631	106	32	90	806	
Jarrett Allen	C	BRK	0.677	125	20	7	19	134	
Jarrett Allen	C	CLE	0.609	506	86	25	71	672	
Deandre Ayton	C	PHO	0.626	727	99	41	81	997	
Udoka Azubuike	C	UTA	0.444	13	0	1	4	16	
Mo Bamba	C	ORL	0.472	265	35	14	58	367	
Aron Baynes	C	TOR	0.441	273	47	17	23	324	
Jordan Bell	C	TOT	0.318	24	7	3	5	15	
Jordan Bell	C	WAS	0.35	19	5	3	3	14	
Jordan Bell	C	GSW	0	5	2	0	2	1	
Khem Birch	C	TOT	0.497	387	89	48	50	482	
Khem Birch	C	ORL	0.45	243	53	32	28	255	
Khem Birch	C	TOR	0.556	144	36	16	22	227	
Goga Bitadze	C	IND	0.428	150	37	9	60	231	
Bismack Biyombo	C	CHO	0.587	347	81	17	74	331	
Marques Bolden	C	CLE	0.333	6	0	2	2	7	
Chris Boucher	C	TOR	0.514	404	63	35	111	818	
Tony Bradley	C	TOT	0.665	239	37	15	30	300	
Tony Bradley	C	PHI	0.68	104	17	6	13	109	
Tony Bradley	C	OKC	0.656	135	20	9	17	191	
Amida Brimah	C	IND	0.625	8	1	0	5	13	
Moses Brown	C	OKC	0.545	383	10	31	47	370	
Thomas Bryant	C	WAS	0.648	61	15	4	8	143	
Clint Capela	C	ATL	0.594	903	49	44	129	956	
Vernon Carey Jr.		C	CHO	0.5	27	2	1	5	46
Wendell Carter Jr.		C	TOT	0.503	443	104	35	42	606
Wendell Carter Jr.		C	CHI	0.512	250	69	18	24	348
Wendell Carter Jr.		C	ORL	0.493	193	35	17	18	258

0.Structure Item (Record Item Type)

```
struct item{
        int AST;//assist
        int BLK;//block
        int STL;//steal
        int REB;//rebound(board)
        float FG;//field goal
        char POS;//position
        int PTS;//total point
        char total_name[50];//total name
        char team[10];//team name
        struct item *next;
};
```

1.Add (database , new_member);

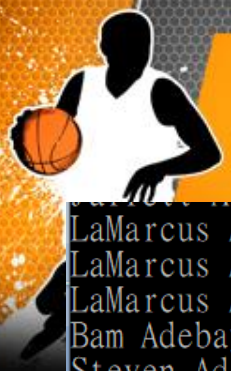
Function:

Add a new item to the database system.

How to use:

input 1, then input each item type for a player

Example



```
LaMarcus Aldridge               BRK     C       64      24      13      3       11      0.52
LaMarcus Aldridge               SAS     C       288     94      36      8       18      0.46
LaMarcus Aldridge               TOT     C       352     118     49      11      29      0.47
Bam Adebayo                     MIA     C       1197    573     346     75      66      0.57
Steven Adams                    NOP     C       438     514     111     54      38      0.61
[1]Add [2]Delete [3]Compare [4]Search [5]Sort(ascend) [6]Sort(descend) [7]Traverse [8]Persona
```

```
Jarrett Allen                   BRK     C       134     123     20      7       19      0.66
[1]Add [2]Delete [3]Compare [4]Search [5]Sort(ascend) [6]Sort(descend) [7]Traverse [8]Personal_analysis [9]exit:1
input a structure data for use.
item    player:Test
item    team:TST
item    AST:0
item    BLK:0
item    STL:0
item    REB:0
item    FG:0
item    POS:T
item    PTS:0
[1]Add [2]Delete [3]Compare [4]Search [5]Sort(ascend) [6]Sort(descend) [7]Traverse [8]Personal_analysis [9]exit:7
```

```
LaMarcus Aldridge               TOT     C       352     118     49      11      29      0.47
Bam Adebayo                     MIA     C       1197    573     346     75      66      0.57
Steven Adams                    NOP     C       438     514     111     54      38      0.61
Test                            TST     T       0       0       0       0       0       0.00
[1]Add [2]Delete [3]Compare [4]Search [5]Sort(ascend) [6]Sort(descend) [7]Traverse [8]Persona
```

2.Delete(database,target_name);

Function:

Delete a given item from the database.

How to use:

input 2, then input a player's name, and then choose the team for the player

Example

```
LaMarcus Aldridge               BRK     C       64      24      13      3       11      0.52
LaMarcus Aldridge               SAS     C       288     94      36      8       18      0.46
LaMarcus Aldridge               TOT     C       352     118     49      11      29      0.47
Bam Adebayo                     MIA     C       1197    573     346     75      66      0.57
Steven Adams                    NOP     C       438     514     111     54      38      0.61
[1]Add [2]Delete [3]Compare [4]Search [5]Sort(ascend) [6]Sort(descend) [7]Traverse [8]Personal
```

```
[1]Add [2]Delete [3]Compare [4]Search [5]Sort(ascend) [6]Sort(descend) [7]Traverse [8]Personal_analysis [9]exit:2
input a structure data for use.
item    player:Steven Adams

NAME            TEAM    POS     PTS     REB     AST     STL     BLK     FG%

Steven Adams    NOP     C       438     514     111     54      38      0.614000
which team :NOP
```

```
Jarrett Allen                   BRK     C       134     125     20      7       19      0.68
Jarrett Allen                   TOT     C       806     631     106     32      90      0.62
LaMarcus Aldridge               BRK     C       64      24      13      3       11      0.52
LaMarcus Aldridge               SAS     C       288     94      36      8       18      0.46
LaMarcus Aldridge               TOT     C       352     118     49      11      29      0.47
Bam Adebayo                     MIA     C       1197    573     346     75      66      0.57
```

3.Compare(database,player1,player2);

Function:

Compare two data between 2 players

How to use:

input 3, then input first player's name, then input second player's name then input the correct team for player1,player2 respectively

Example

```
[1]Add [2]Delete [3]Compare [4]Search [5]Sort(ascend) [6]Sort(descend) [7]Traverse [8]Personal_analysis [9]exit:3
input player1 name:
item    player:Jarrett Allen
input player2 name:
item    player:Bam Adebayo

NAME            TEAM    POS     PTS     REB     AST     STL     BLK     FG%
Jarrett Allen   CLE     C       672     506     86      25      71      0.609000

NAME            TEAM    POS     PTS     REB     AST     STL     BLK     FG%
Jarrett Allen   BRK     C       134     125     20      7       19      0.677000

NAME            TEAM    POS     PTS     REB     AST     STL     BLK     FG%
Jarrett Allen   TOT     C       806     631     106     32      90      0.618000

Which team data do you want to know for Jarrett Allen? :BRK

NAME            TEAM    POS     PTS     REB     AST     STL     BLK     FG%
Bam Adebayo     MIA     C       1197    573     346     75      66      0.570000

Which team data do you want to know for Bam Adebayo? :MIA
        Jarrett Allen   vs      Bam Adebayo
PTS     2(loss)         48(win)
AST     0(loss)         14(win)
REB     1(loss)         14(win)
BLK     0(loss)         2(win)
STL     1(loss)         7(win)
FG      0.250000(loss)          0.372000(win)
```

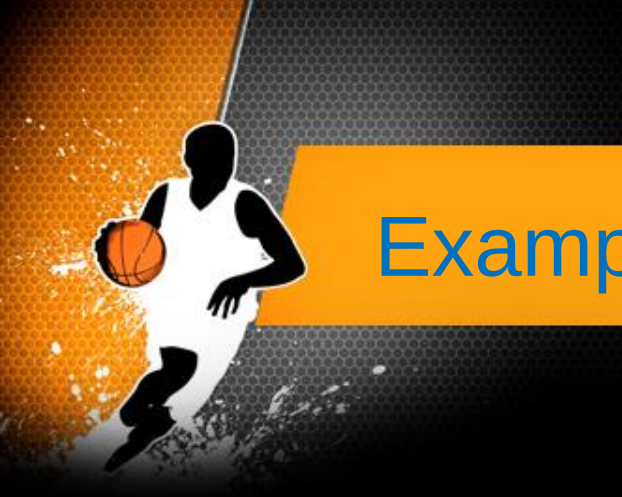
4.Search(item_type,datum);

Function:

Given certain information about the item, the program needs to find and print the specific item.

How to use

input 4, then input item type(NAME,TEAM,POS), then input datum for the item type



Example

```
DaMarcus Aldridge      101     C       552     118     49      11      29      0.475000
[1]Add [2]Delete [3]Compare [4]Search [5]Sort(ascend) [6]Sort(descend) [7]Traverse [8]Personal_analysis [9]exit:4
input item NAME/TEAM/POS:NAME
input actual name/team/pos:Jarrett Allen

NAME            TEAM    POS     PTS     REB     AST     STL     BLK     FG%

Jarrett Allen   CLE     C       672     506     86      25      71      0.609000

NAME            TEAM    POS     PTS     REB     AST     STL     BLK     FG%

Jarrett Allen   BRK     C       134     125     20      7       19      0.677000

NAME            TEAM    POS     PTS     REB     AST     STL     BLK     FG%

Jarrett Allen   TOT     C       806     631     106     32      90      0.618000
[1]Add [2]Delete [3]Compare [4]Search [5]Sort(ascend) [6]Sort(descend) [7]Traverse [8]Personal_analysis [9]exit:
```

5.6.Sort(database,item_type);

Function*2:

sort data in ascend or descend form

How to use

input 5/6, then input a item type

Example

Russell Westbrook WAS G 1445 750 763 89 23 0.44
[1]Add [2]Delete [3]Compare [4]Search [5]Sort(ascend) [6]Sort(descend) [7]Traverse [8]Personal_analysis [9]exit:6
input AST/BLK/STL/REB/FG/PTS:AST

NAME	TEAM	POS	PTS	REB	AST	STL	BLK	FG%
Russell Westbrook	WAS	G	1445	750	763	89	23	0.44
Chris Paul	PHO	G	1149	312	622	99	19	0.50
Nikola Jokic	DEN	C	1898	780	599	95	48	0.57
Trae Young	ATL	G	1594	245	594	53	12	0.44
Luka Doncic	DAL	G	1830	527	567	64	36	0.48
Draymond Green	GSW	F	444	449	558	105	52	0.45
Damian Lillard	POR	G	1928	283	505	62	17	0.45
James Harden	TOT	G	1083	348	475	53	33	0.47
Ja Morant	MEM	G	1204	252	465	57	13	0.45
T.J. McConnell	IND	G	596	256	456	128	23	0.56
Ricky Rubio	MIN	G	582	223	433	98	4	0.39
Julius Randle	NYK	F	1712	723	427	64	18	0.46
DeMar DeRozan	SAS	F	1316	259	422	56	15	0.50
De'Aaron Fox	SAC	G	1461	203	417	87	27	0.48
Domantas Sabonis	IND	F	1260	742	415	76	33	0.54
Ben Simmons	PHI	G	829	417	401	93	35	0.56
James Harden	BRK	G	885	307	392	46	27	0.47
Khris Middleton	MIL	F	1385	406	370	74	9	0.48
Jimmy Butler	MIA	F	1116	359	369	108	18	0.50
Stephen Curry	GSW	G	2015	345	363	77	8	0.48
Dejounte Murray	SAS	G	1051	473	363	101	7	0.45

7.Traverse(database);

Function:

Print all items in the database in a specific format.

How to use

input 7,then input 1 for all database;2 for bestplayer and five highest for each item type

Example

```
Ignas Brazdeikis                PHI     F       0       2       0       0       0       0.00
[1]Add [2]Delete [3]Compare [4]Search [5]Sort(ascend) [6]Sort(descend) [7]Traverse [8]Personal_analysis [9]exit:7
[1]print all [2]print stats leader:2


PTS leader
NAME                    PTS
Stephen Curry           2015
Damian Lillard          1928
Nikola Jokic            1898
Bradley Beal            1878
Luka Doncic             1830

REB leader
NAME                    REB
Rudy Gobert             960
Clint Capela            903
Nikola Vucevic          817
Enes Freedom            795
Nikola Jokic            780

AST leader
NAME                    AST
Russell Westbrook       763
Chris Paul              622
Nikola Jokic            599
Trae Young              594
Luka Doncic             567

SEASON POINT Leader: Stephen Curry (GSW) 2015
SEASON BLOCK Leader: Rudy Gobert (UTA) 190
SEASON ASSIST Leader: Russell Westbrook (WAS) 763
SEASON STEAL Leader: T.J. McConnell (IND) 128
SEASON REBOUND Leader: Rudy Gobert (UTA) 960
```

Example

SEASON REBOUND Leader: Rudy Gobert (UTA) 960

[1]Add [2]Delete [3]Compare [4]Search [5]Sort(ascend) [6]Sort(descend) [7]Traverse [8]Personal_analysis [9]exit:7

[1]print all [2]print stats leader:1

NAME	TEAM	POS	PTS	REB	AST	STL	BLK	FG%
Patrick McCaw	TOR	F	5	3	4	2	0	1.00
Udonis Haslem	MIA	C	4	1	0	0	0	1.00
Gary Clark	DEN	F	119	0	0	0	0	1.00
Damian Jones	LAL	C	43	26	1	1	7	0.94
Gary Payton II	GSW	G	25	11	1	6	1	0.77
DeAndre Jordan	BRK	C	426	427	93	17	65	0.76
Tacko Fall	BOS	C	47	52	3	1	20	0.72
Robert Williams	BOS	C	417	358	94	43	91	0.72
Donta Hall	ORL	F	73	62	11	5	10	0.71
Norvel Pelle	NYK	C	11	11	1	1	6	0.71
Dewayne Dedmon	MIA	C	113	86	12	9	6	0.71
Chris Silva	MIA	F	30	25	6	1	5	0.69
Daniel Gafford	CHI	F	147	103	17	11	34	0.69
Daniel Gafford	TOT	F	380	231	29	26	75	0.68
Daniel Gafford	WAS	C	233	128	12	15	41	0.68
Damian Jones	TOT	C	183	121	29	11	29	0.68
Tyler Cook	DET	F	154	93	15	8	2	0.68
Tony Bradley	PHI	C	109	104	17	6	13	0.68
Jarrett Allen	BRK	C	134	125	20	7	19	0.68
Rudy Gobert	UTA	C	1015	960	89	40	190	0.68
Tyler Cook	TOT	F	156	95	17	8	2	0.67
Grant Riller	CHO	G	18	1	3	1	0	0.67
Tony Bradley	TOT	C	300	239	37	15	30	0.67
Damian Jones	SAC	C	118	77	24	9	17	0.66
Tony Bradley	OKC	C	191	135	20	9	17	0.66
Mitchell Robinson	NYK	C	256	252	17	35	45	0.65
Ivica Zubac	LAC	C	650	519	90	24	62	0.65
Thomas Bryant	WAS	C	143	61	15	4	8	0.65
Onyeka Okongwu	ATL	C	228	163	18	23	33	0.64
Derrick Favors	UTA	C	369	376	44	32	68	0.64
Richaun Holmes	SAC	C	869	504	101	39	96	0.64
Robin Lopez	WAS	C	642	272	55	15	44	0.63
Willie Cauley-Stein	DAL	C	280	236	35	21	43	0.63
Taj Gibson	NYK	C	241	250	36	31	49	0.63
Deandre Ayton	PHO	C	997	727	99	41	81	0.63
Rodions Kurucs	MIL	F	15	9	4	3	0	0.63

8.Personal_analysis(database);

Function:

Analyze the player’s data in each team he stayed .

How to use

input 8,then input player's name, then input item_type, and then choose ascend or descend form for data

Example

```
Steven Adams                    NOP     C       438     314     111     24      38      0.61
[1]Add [2]Delete [3]Compare [4]Search [5]Sort(ascend) [6]Sort(descend) [7]Traverse [8]Personal_analysis [9]exit:8
input player's name.
item    player:Jarrett Allen
input AST/BLK/STL/REB/FG:AST
[1]Sort(ascend) [2]Sort(descend):2
NAME                            TEAM    POS     PTS     REB     AST     STL     BLK     FG%
Jarrett Allen                   TOT     C       806     631     106     32      90      0.62
Jarrett Allen                   CLE     C       672     506     86      25      71      0.61
Jarrett Allen                   BRK     C       134     125     20      7       19      0.68
[1]Add [2]Delete [3]Compare [4]Search [5]Sort(ascend) [6]Sort(descend) [7]Traverse [8]Personal_analysis [9]exit:
```

9.Exit(database);

Function:

Terminates the program

How to use

input 9

Example

```
[1]Add [2]Delete [3]Compare [4]Search [5]Sort(ascend) [6]Sort(descend) [7]Traverse [8]Personal_analysis [9]exit:9
exit!
***Program Termination.***
```


END