BIL105E

Introduction to Computer Science and Engineering

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1.Introduction

The aim of this project is to simulate a pass game between two teams. Desired number of players (N) needs to pass the ball between desired number of players (W) to win a round. Fırst team that reaches to desired won of rounds (S) wins. Pass has a desired success rate over one hundred (P) and opposite team has rest of the probability (100-P) to get the ball.

2.Development

The program developed and tested on both on a Windows Compter and on ITU SSH Linux server. More info can be found on the source code, named as 150150701.c.

3.Variables

N: Number of players

S: Rounds needed to win, to win the game (Score)

P: Success rate of the pass between team players (on a scale of 0 to 100)

W: Number of players needs to pass between to win a round and get a score

score1: Score of team 1

score2: Score of team 2

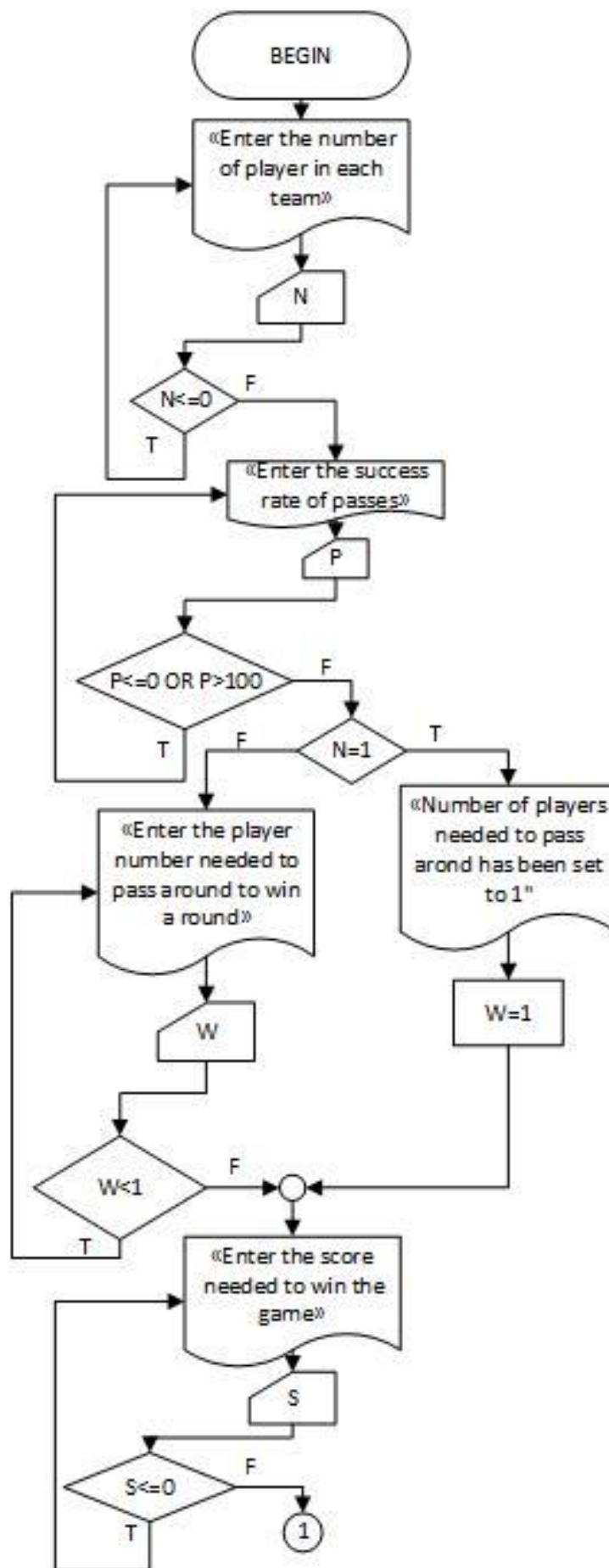player: Indicator of the player who has the ball
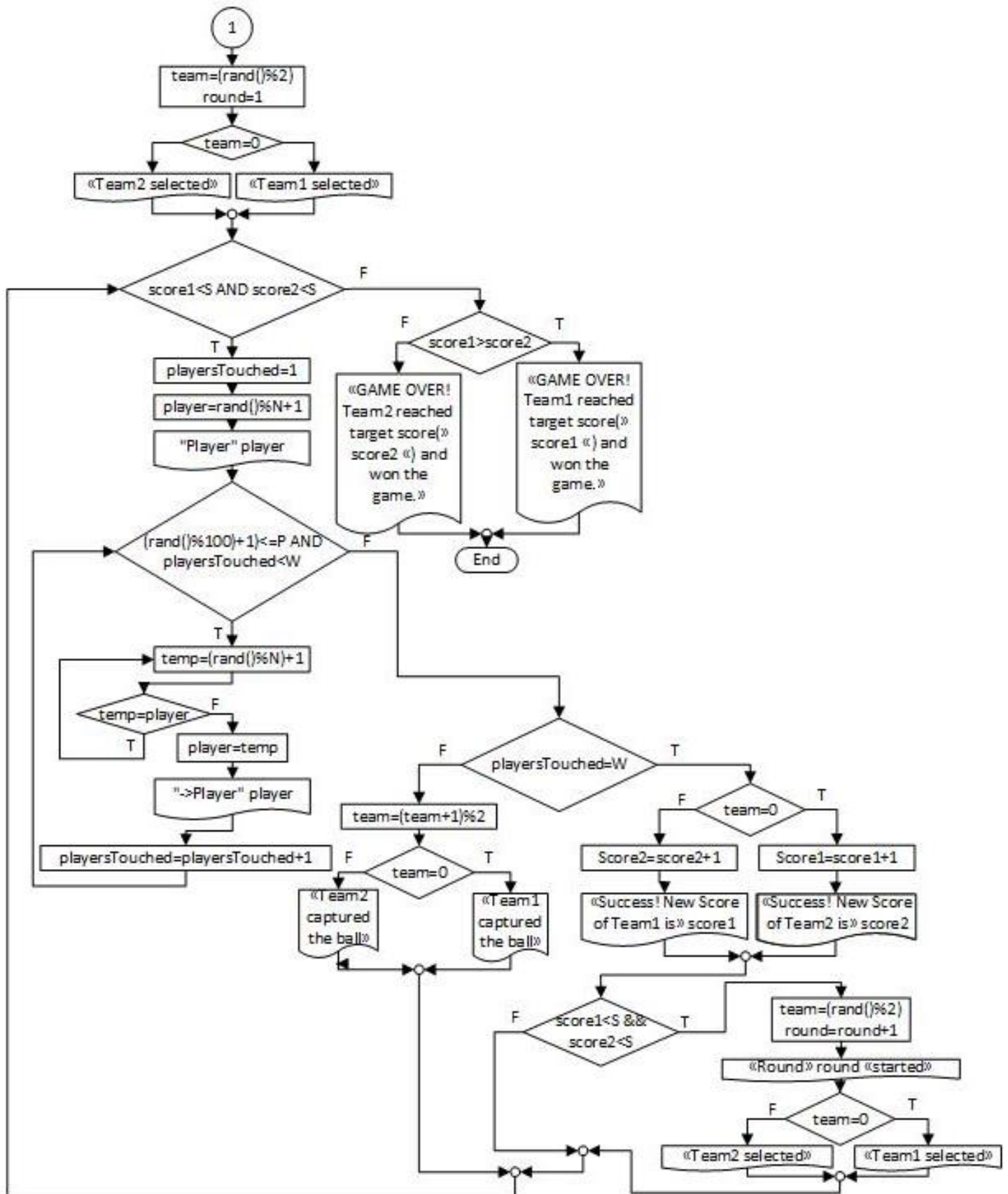
team: Indicator of the team which have the ball

playersTouched: Number of players touched the ball while passing

temp: temporary

round:round number

4.Flowchart

```
                          ┌─────────────────┐
                          │      BEGIN       │
                          └─────────────────┘
                                   │
                                   ▼
                          «Enter the number
                           of player in each
                                team»
                                   │
                                   ▼
                                   N
                                   │
                                   ▼
                          ┌─────────┐   F
                          │  N<=0   ├──────►  «Enter the success
                          └─────────┘            rate of passes»
                               T                      │
                                                      ▼
                                                      P
                                                      │
                                                      ▼
                          ┌──────────────┐  F
                          │ P<=0 OR P>100├─────►  ┌───────┐   T
                          └──────────────┘    F   │  N=1  ├────────►  «Number of players
                               T         ◄────────┤       │            needed to pass
                                                  └───────┘            arond has been set
                                                                            to 1"
                          «Enter the player                                  │
                           number needed to                                 ▼
                           pass around to win                             W=1
                              a round»                                      │
                                   │                                        │
                                   ▼                                        │
                                   W                                        │
                                   │                                        │
                                   ▼                                        │
                          ┌─────────┐   F                                   │
                          │  W<1    ├──────►  ◯  ◄──────────────────────────┘
                          └─────────┘         │
                               T              ▼
                                      «Enter the score
                                       needed to win the
                                            game»
                                             │
                                             ▼
                                             S
                                             │
                                             ▼
                                    ┌─────────┐   F
                                    │  S<=0   ├──────►  ( 1 )
                                    └─────────┘
                                         T
```

1

team=(rand()%2)
round=1

team=0

«Team2 selected»   «Team1 selected»

score1<S AND score2<S — F

T

playersTouched=1

player=rand()%N+1

"Player" player

(rand()%100)+1)<=P AND
playersTouched<W

F

score1>score2

F   T

«GAME OVER!
Team2 reached
target score(»
score2 «) and
won the
game.»

«GAME OVER!
Team1 reached
target score(»
score1 «) and
won the
game.»

End

T

temp=(rand()%N)+1

temp=player — F

T

player=temp

"->Player" player

playersTouched=playersTouched+1

playersTouched=W

F   T

team=(team+1)%2

team=0

F   T

team=0

F   T

«Team2
captured
the ball»

«Team1
captured
the ball»

Score2=score2+1

Score1=score1+1

«Success! New Score
of Team1 is» score1

«Success! New Score
of Team2 is» score2

score1<S &&
score2<S

F   T

team=(rand()%2)
round=round+1

«Round» round «started»

team=0

F   T

«Team2 selected»   «Team1 selected»

5.Summary

Project is completed with an optimized and stable algorithm and it has no setbacks or limitations.