```
#include <FEHLCD.h>
#include <FEHIO.h>
#include <FEHUtility.h>
#include <String.h>
#include <stdlib.h>
#include <time.h>

// (0,0) to (319,239)

class Player{     //Player class is the object for the two players in the
game
    public:
        Player(const char t[], int p);
        Player();
        void drawPlayer(int p);
        void moveUp();
        void moveDown();
        void moveLeft();
        void moveRight();
        int getX();
        int getY();
        int getHX();
        int getHY();
        bool inEndZone();
    private:
        int x;  //top left x coordiante of rectangle
        int y; // top left y coordinate of rectangle
        int hX; // top left x coordinate of helmet
        int hY; // top left y coordinate of helmet
        char team[10];
        int position;  // position is 1 for user, 2 for AI


};
void setField(); // makes the field to be played on
bool isTackled(Player a, Player b);  //determines if the AI tackled the user
int main()
{ int wins=0;
    int points=0;
    int t=0;
    do{             //DO-WHILE LOOP
        t=1;
    }while(t==0);

    switch (t){  //SWITCH-CASE
    case 1:
        t=2;
        break;
    default:
        t=3;
    }
    menu:
    LCD.SetBackgroundColor(BLACK);  //sets inital menu screen
    LCD.Clear();
    LCD.SetFontColor(SCARLET);
    LCD.WriteAt("OSU Tecmo Bowl",80,40);
    LCD.FillRectangle(80,80,80,50);
```

```
    LCD.FillRectangle(80,140,80,50);
    LCD.FillRectangle(170, 80, 80, 50);
    LCD.FillRectangle(170, 140, 80, 50);
    LCD.SetFontColor(WHITE);
    LCD.WriteAt("Play", 80, 105);
    LCD.WriteAt("Learn", 170, 105);
    LCD.WriteAt("Credits", 80, 165);
    LCD.WriteAt("Stats", 170, 165);
    float x,y;
    while(!LCD.Touch(&x,&y)); // wait for user to make decision  //LOGICAL
OPERATOR

    while(LCD.Touch(&x, &y)){ //WHILE LOOP
        if(x>=170 && x<= 250 && y>=80 && y<=130){ // if it is how to play
button touched  //RELATIONAL OPERATOR
            LCD.Clear();
            LCD.WriteLine("Use the white arrows");
            LCD.WriteLine("to score a");
            LCD.WriteLine("touchdwon! Watch");
            LCD.WriteLine("out for the defender!");
            LCD.WriteLine("Each TD: 7 points");
            LCD.WriteLine("DO NOT RUN INTO ARROWS");
            Sleep(7.0);
            goto menu;
        }
        if(x>=170 && x<= 250 && y>=140 && y<=190){  // if it is the stats
button touched
            LCD.Clear();
            LCD.Write("Wins: ");
            LCD.WriteLine(wins);
            LCD.Write("Points Scored: ");
            LCD.WriteLine(points);
            Sleep(5.0);
            goto menu;
        }
        if(x>=80 && x<= 160 && y>=140 && y<=190){  //if it is the credits
button touched
            LCD.Clear();
            LCD.WriteLine("All coding done by");
            LCD.WriteLine("Jackson Corbisello and");
            LCD.WriteLine("Sean Sullivan");
            LCD.WriteLine("FEH Proteus libraries");
            LCD.WriteLine("used in coding");
            Sleep(7.0);
            goto menu;
        }

        if(x>=80 && x<= 160 && y>=80 && y<=130){  // if it is the play game
button touched




     setField();
     srand(TimeNow());
    Player user("OSU", 1);  // makes both players
    Player comp("UM", 2);  // CLASS/OBJECT
```

```
    LCD.SetFontColor(BLACK);  // shows a 3-2-1 countdown to start game
    LCD.FillRectangle(80,0,160,50);
    LCD.FillRectangle(160,0,80,240);
    LCD.FillRectangle(80,189,160,50);
    LCD.FillRectangle(80,95,160,50);
    Sleep(1.0);
    setField();
    user.drawPlayer(1);
    comp.drawPlayer(2);
    LCD.SetFontColor(BLACK);
    LCD.FillRectangle(80,0,160,50);
    LCD.FillRectangle(160,0,80,120);
    LCD.FillRectangle(80,95,160,50);
    LCD.FillRectangle(80,189,160,50);
    LCD.FillRectangle(80,95,50,100);
    Sleep(1.0);
    setField();
    user.drawPlayer(1);
    comp.drawPlayer(2);
    LCD.SetFontColor(BLACK);
    LCD.FillRectangle(110,0,100,240);
    Sleep(1.0);
    setField();
    user.drawPlayer(1);
    comp.drawPlayer(2);
    LCD.SetFontColor(BLACK);
    bool useRight=false;
    int time=1;
   while(!isTackled(user, comp) && !user.inEndZone()){ //while player isn't
tackled and isn't in endzone

        while(!LCD.Touch(&x, &y)){
            if(comp.getX()-3<0)  // if AI is going to hit left wall, make him
go back right
                useRight=true;
            if(!useRight)    //IF-ELSE
           comp.moveLeft();
            else
                comp.moveRight();
            if(comp.getX()+54>319) // if he will hit right wall, go left
                useRight=false;
            Sleep(0.25);
            if(isTackled(user,comp))
                 break;

        }

            time++;
    while(LCD.Touch(&x, &y)){
        if(isTackled(user,comp) || user.inEndZone())
            break;
        if(x<=319 && x>=289 && y<=209 && y>=179){ // if touches right arrow
            user.moveRight();
            if(comp.getX()-3<0) //move AI
                useRight=true;
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            if(!useRight)
           comp.moveLeft();
            else
                comp.moveRight();
            if(comp.getX()+54>319)
                useRight=false;

        }
        else if (x<=259 && x>=229 && y<=209 && y>=179){ // if touches left
arrow
            user.moveLeft();
            if(comp.getX()-3<0) //move AI
                useRight=true;
            if(!useRight)
           comp.moveLeft();
            else
                comp.moveRight();
            if(comp.getX()+54>319)
                useRight=false;
            //comp.moveLeft();
        }
        else if(x<=289 && x>=259 && y<=239 && y>=209){ // if touches down
arrow
            user.moveDown();
            if(comp.getX()-3<0) //move AI
                useRight=true;
            if(!useRight)
           comp.moveLeft();
            else
                comp.moveRight();
            if(comp.getX()+54>319)
                useRight=false;
            //comp.moveLeft();
        }
        else if(x<=289 && x>=259 && y<=179 && y>=149){ //if touches up arrow
            user.moveUp();
            if(comp.getX()-3<0) //move AI
                useRight=true;
            if(!useRight)
           comp.moveLeft();
            else
                comp.moveRight();
            if(comp.getX()+54>319)
                useRight=false;
            //comp.moveLeft();
        }
    }
    }// this loop ends when player is tackled or is in endzone
   LCD.SetBackgroundColor(BLACK);
   LCD.Clear();
   LCD.SetFontColor(SCARLET);
   if(user.inEndZone()){ //if user scores
       LCD.Write("TOUCHDOWN!");
       wins++; //add wins
       points+=7; //add points
   }
   else
```

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       LCD.Write("Sorry you were tackled!"); //user was tackled
   Sleep(5.0);
   goto menu; } //go to menu
    }
}

void setField(){  // makes background and field players will play on
    LCD.SetBackgroundColor(GREEN);
    LCD.Clear();
    LCD.SetFontColor(WHITE);
    LCD.FillRectangle(0,0,320,36);
    LCD.SetFontColor(SCARLET);
    LCD.FillRectangle(5,5,310,26);
    LCD.SetFontColor(WHITE);
    LCD.FillRectangle(289,179,30,30); //right
    LCD.FillRectangle(259,179,30,30);
    LCD.FillRectangle(229, 179, 30, 30); //left
    LCD.FillRectangle(259,209,30,30); //down
    LCD.FillRectangle(259,149,30,30);
    LCD.SetFontColor(BLACK);
    LCD.DrawRectangle(259,179,30,30);
}

bool isTackled(Player a, Player b){ // tests if a player is tackled
    if(a.getY()==b.getY()+15 || a.getY() == b.getHY()+27 ||
a.getHY()==b.getY()+15 || a.getHY()==b.getHY()+27){ // checks if the y-value
for the any part of either of players is same
        int aRect[52];
        int bRect[52];
        int aSq[28];
        int bSq[28];
        for(int i=0; i<52; i++){  //gets x-coordinates of the edges
            if(i<28){
              aSq[i]=a.getHX()+i;
              bSq[i]=b.getHX()+i;
            }
            aRect[i]=a.getX()+i;
            bRect[i]=b.getX()+i;
        }
        // each for loop checks if one of the edge points on one is equal to
an edge point on other player
        for(int k=0; k<52; k++)  //FOR-LOOP
            for(int j=0; j<52; j++)
                if(aRect[k]==bRect[j])
                    return true;

        for(int k=0; k<52; k++)
            for(int j=0; j<28; j++)
                if(aRect[k]==bSq[j])
                    return true;

        for(int k=0; k<28; k++)
            for(int j=0; j<52; j++)
                if(aSq[k]==bRect[j])
                    return true;

        for(int k=0; k<28; k++)
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            for(int j=0; j<28; j++)
                if(aSq[k]==bSq[j])
                    return true;


    }


    return false; //if x's or y's are not same it is not a tackle
}

Player::Player(const char t[], int p){
    strcpy(team, t);
    position=p;
    if(p==1){   //if user
        x=134;
        y=223;
        hX=146;
        hY=211;
    }
    else{ //if AI
        x=134;
        y=37;
        hX=146;
        hY=37;
    }
    drawPlayer(p);
}

void Player::drawPlayer(int p){ //draws player on Proteus screen
    if(p==1){ //user
    LCD.SetFontColor(SCARLET);
    LCD.FillRectangle(x,y,52,16);
    LCD.SetFontColor(GRAY);
    LCD.FillRectangle(hX,hY,28,28);
    }
    else{ //AI
        LCD.SetFontColor(BLUE);
        LCD.FillRectangle(x,y,52,16);
        LCD.SetFontColor(YELLOW);
        LCD.FillRectangle(hX,hY,28,28);
    }
}

void Player::moveUp(){ //player moves up on screen as long as wont go past
screen
    if(hY-3>0){
    LCD.SetFontColor(GREEN);
    LCD.FillRectangle(x,y+13,52,3);
    y-=3;
    hY-=3;
    drawPlayer(position);
    }
}
void Player::moveDown(){ //player moves down on screen as long as wont go
past screen
    LCD.SetFontColor(GREEN);
```

```
    LCD.FillRectangle(x,y,12,3);
    LCD.FillRectangle(x+40,y,12,3);
    LCD.FillRectangle(hX, hY, 28,3);
    y+=3;
    hY+=3;
    drawPlayer(position);

}

void Player::moveLeft(){ //player moves left on screen as long as wont go
past screen
    if(x-3>0){
    LCD.SetFontColor(GREEN);
    LCD.FillRectangle(x+49,y,3,16);
    LCD.FillRectangle(hX+25, hY, 3, 28);
    x-=3;
    hX-=3;
    drawPlayer(position);
    }

}
 void Player::moveRight(){ //player moves right on screen as long as wont go
past screen
     if(x+54<319){
     LCD.SetFontColor(GREEN);
     LCD.FillRectangle(x,y,3,16);
     LCD.FillRectangle(hX,hY,3,28);
     x+=3;
     hX+=3;
     drawPlayer(position);
     }


 }
 int Player::getX(){ //returns x coord
     return x;
 }
 int Player::getY(){ //returns y
     return y;
 }
 int Player::getHX(){ // returns helmet x coord
     return hX;
 }
 int Player::getHY(){ //returns helemt y coord
     return hY;
 }
bool Player::inEndZone(){ //checks if player is in end zone if y coord in
helmet is across goal line
    if(hY==31)
        return true;
    return false;
}
```