

[illegible]

File: E:\delta 3.0 program for robot with pre auton.c

```
// You may want to perform some actions before the competition starts. Do them in the
// following function.
//
////////////////////////////////////
void pre_auton()
{
    bLCDBacklight=true;//Turn the LCD backlight on to show selected autons//
    //Set bStopTasksBetweenModes to false if you want to keep user created tasks running between
    //Autonomous and Tele-Op modes. You will need to manage all user created tasks if set to false.
    bStopTasksBetweenModes = true;//Stops all tasks between any mode//

    //////////////////////////////////
    //First-Time pre-auton setup//
    //////////////////////////////////
    clearLCDLine( 0/*0=Top Line, 1=Bottom Line*/ );//Clear the LCD screen to display any needed data//
    clearLCDLine( 1/*0=Top Line, 1=Bottom Line*/ );//Clear the LCD screen to display any needed data//
    displayLCDCenteredString( 0/*0=Top Line, 1=Bottom Line*/ , "Sens Clring..."/*Text To Be Displayed*/ );//Display "Sen
    wait1Msec(2000);//Wait 2 seconds//
    SensorValue[LiftEnc]=0;//Clear The Lift Encoder//
    SensorValue[DistanceSensor]=0;//Clear the Distance Sensor//
    //////////////////////////////////

    //////////////////////////////////
    //Infinite self-check//
    //////////////////////////////////
    while(true){//Create a while loop to loop the clearing//

        //////////////////////////////////
        //Distance Sensor Checking//
        //////////////////////////////////
        if(SensorValue[DistanceSensor] <-0.1/*Wheel Rotation In Degrees*/ || SensorValue[DistanceSensor] >0.1/*Wheel Rotati
            clearLCDLine( 0/*0=Top Line, 1=Bottom Line*/ );//Clear the LCD screen to display any needed data//
            displayLCDCenteredString( 0/*0=Top Line, 1=Bottom Line*/ , "Sens Clring..."/*Text To Be Displayed*/ );//Display
            SensorValue[DistanceSensor]=0;//Clear the Distance Sensor//
            wait1Msec(2000);//Wait 2 seconds//
            SensorValue[DistanceSensor]=0;//Clear the Distance Sensor//
        }
        //////////////////////////////////

        //////////////////////////////////
        //Lift Encoder Checking//
        //////////////////////////////////
        else if(SensorValue[LiftEnc] <-0.1/*Lift Rotation In Degrees*/ || SensorValue[LiftEnc] >0.1/*Lift Rotation In Degre
            clearLCDLine( 0/*0=Top Line, 1=Bottom Line*/ );//Clear the LCD screen to display any needed data//
            displayLCDCenteredString( 0/*0=Top Line, 1=Bottom Line*/ , "Sens Clring..."/*Text To Be Displayed*/ );//Display
```

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```
SensorValue[LiftEnc]=0;//Clear The Lift Encoder//
wait1Msec(2000);//Wait 2 seconds//
SensorValue[LiftEnc]=0;//Clear The Lift Encoder//
}
////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////
clearLCDLine( 0/*0=Top Line, 1=Bottom Line*/ );//Clear the LCD screen to display any needed data//
//Display that everything is checked and cleared when all done//
displayLCDCenteredString( 0/*0=Top Line, 1=Bottom Line*/ , "Sens Cleared"/*Text To Be Displayed*/ );//Display "Sens
wait1Msec(500);//Wait 0.5 seconds//

}
////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////

//Tasks To Be Ran For Autonomous//
////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////

task downposition(){//Down Position For Autonomous//
while(true){//Create An Infinite Running Loop//
motor[ClawL]=((SensorValue[LeftClawPot] -1200/*Width From Starting Pos.* / ) /10/*Sensitivity*/ ) ^2/*Slope*/ ;//Lef
motor[ClawR]=((SensorValue[RightClawPot] -1200/*Width From Starting Pos.* / ) /10/*Sensitivity*/ ) ^2/*Slope*/ ;//R
//Lift PI control to position//
motor[LiftL1]=(SensorValue[LiftEnc] -2/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ;//Left lift being ran by th
motor[LiftL2]=(SensorValue[LiftEnc] -2/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ;//Left lift being ran by th
motor[LiftR1]=(SensorValue[LiftEnc] -2/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ;//Right lift being ran by t
motor[LiftR2]=(SensorValue[LiftEnc] -2/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ;//Right lift being ran by t
}
}

task closeclaw(){//Close Claw Position For Autonomous//
while(true){//Create An Infinite Running Loop//
motor[ClawL]=((SensorValue[LeftClawPot] -2700/*Width From Starting Pos.* / ) /5/*Sensitivity*/ );//Left claw being ra
motor[ClawR]=((SensorValue[RightClawPot] -2700/*Width From Starting Pos.* / ) /5/*Sensitivity*/ );//Right claw being
//Lift PI control to position//
motor[LiftL1]=(SensorValue[LiftEnc] -2/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ;//Left lift being ran by th
motor[LiftL2]=(SensorValue[LiftEnc] -2/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ;//Left lift being ran by th
motor[LiftR1]=(SensorValue[LiftEnc] -2/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ;//Right lift being ran by t
motor[LiftR2]=(SensorValue[LiftEnc] -2/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ;//Right lift being ran by t
}
}

task intakeposition(){//Intake(hold up) Position For Autonomous//
```

```

while(true){ //Create An Infinite Running Loop//
  //Make sure claw is closed//
  motor[ClawL]=((SensorValue[LeftClawPot] -2700/*Width From Starting Pos.* / ) /5/*Sensitivity*/ ); //Left claw being ran by
  motor[ClawR]=((SensorValue[RightClawPot] -2700/*Width From Starting Pos.* / ) /5/*Sensitivity*/ ); //Right claw being
  //Lift PI control to position//
  motor[LiftL1]=(SensorValue[LiftEnc] +50/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ; //Left lift being ran by
  motor[LiftL2]=(SensorValue[LiftEnc] +50/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ; //Left lift being ran by
  motor[LiftR1]=(SensorValue[LiftEnc] +50/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ; //Right lift being ran by
  motor[LiftR2]=(SensorValue[LiftEnc] +50/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ; //Right lift being ran by
}

task dumpposition(){ //Dump Position For Autonomous//
  while(true){ //Create An Infinite Running Loop//
    if((-SensorValue[LiftEnc])<110){ //If the lift is below dump position, keep claw closed//
      motor[ClawL]=((SensorValue[LeftClawPot] -2700/*Width From Starting Pos.* / ) /5/*Sensitivity*/ ); //Left claw bein
      motor[ClawR]=((SensorValue[RightClawPot] -2700/*Width From Starting Pos.* / ) /5/*Sensitivity*/ ); //Right claw b
    }
    else{ //When at or above dump position, open claw//
      motor[ClawL]=((SensorValue[LeftClawPot] -1200/*Width From Starting Pos.* / ) /10/*Sensitivity*/ ) ^2/*Slope*/ ; /
      motor[ClawR]=((SensorValue[RightClawPot] -1200/*Width From Starting Pos.* / ) /10/*Sensitivity*/ ) ^2/*Slope*/
    }
    //Lift PI control to position//
    motor[LiftL1]=(SensorValue[LiftEnc] +145/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ; //Left lift being ran b
    motor[LiftL2]=(SensorValue[LiftEnc] +145/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ; //Left lift being ran b
    motor[LiftR1]=(SensorValue[LiftEnc] +145/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ; //Right lift being ran
    motor[LiftR2]=(SensorValue[LiftEnc] +145/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ; //Right lift being ran
  }
}

////////////////////////////////////

//
//
//
// Autonomous Task
//
// This task is used to control your robot during the autonomous phase of a VEX Competition.
// You must modify the code to add your own robot specific commands here.
//
////////////////////////////////////

task autonomous()
{
  //.....
  // Insert user code here.
  // .....
  AutonomousCodePlaceholderForTesting(); // Remove this function call once you have "real" code.
}

```

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```
}

//
//
// LCD Auton Chooser And Voltage Task
//
// This task is used to display the selected autons during the user control phase of a VEX Competition.
// You must modify the code to add your own robot specific commands here.
//
//
task showautons() { //Show the selected mode for the auton; starts in driver control mode//
    string backupBattery, primBattery; //Create a string that can be ran for the voltage displaying//
    while(true) { //Create an infinite-running loop (obviously running for only driver control)//
        wait1Msec(100); //Slow down refresh rate to use less CPU as well as decrease glitches//
        clearLCDLine( 0/*0=Top Line, 1=Bottom Line*/ ); //Clear the LCD screen to display any needed data//
        clearLCDLine( 1/*0=Top Line, 1=Bottom Line*/ ); //Clear the LCD screen to display any needed data//

        //
        //Voltage Warnings//
        //
        //Expander Battery Displaying//
        if(SensorValue[Expander]<2240) { //If Expander Battery is below 8V (2240 Value)//
            displayLCDString( 0/*0=Top Line, 1=Bottom Line*/ , 0/*0=Uncentered, 1=Centered*/ , "Exp. Low:"); //Display Expander
            sprintf(backupBattery, "%1.2f%c", SensorValue[Expander]/280.0, 'V'); //Build the value to be displayed//
            displayNextLCDString(backupBattery); //Display the string "backupBattery"//
        }
        //Primary Battery Displaying//
        else if(nImmediateBatteryLevel<8000) { //If Primary Battery is below 8V (7000 Value)//
            displayLCDString( 0/*0=Top Line, 1=Bottom Line*/ , 0/*0=Uncentered, 1=Centered*/ , "Prim. Low:"); //Display Primary
            sprintf(primBattery, "%1.2f%c", nImmediateBatteryLevel/1000.0, 'V'); //Build value to be displayed//
            displayNextLCDString(primBattery); //Display the string "primBattery"//
        }
        else { //When all are above 8V//
            displayLCDCenteredString( 0/*0=Top Line, 1=Bottom Line*/ , "Batt Above 8V"/*Text To Be Displayed*/ ); //Display "Bat
        }
        //
        //
        //Left Side//
        //
        if(SensorValue[AutonSide] <1000/*SensorValue Starting W/ 0 From the Left*/ ) { //When "autonside" is on the left side
            if(SensorValue[AutonDial] <800/*SensorValue Starting W/ 0 From the Left*/ ) { //The farthest left side. Display no s
                displayLCDCenteredString( 1/*0=Top Line, 1=Bottom Line*/ , "No 2nd Cub|L"/*Text To Be Displayed*/ ); //Display
            }
            else if(SensorValue[AutonDial] <1600/*SensorValue Starting W/ 0 From the Left*/ && SensorValue[AutonDial] >800/*
```

```

        displayLCDCenteredString( 1/*0=Top Line, 1=Bottom Line*/ , "2nd Cub Left|L"/*Text To Be Displayed*/ ); //Displ
    }
    else if(SensorValue[AutonDial] <2400/*SensorValue Starting W/ 0 From the Left*/ &&SensorValue[AutonDial] >1600/
        displayLCDCenteredString( 1/*0=Top Line, 1=Bottom Line*/ , "2nd Cub Center|L"/*Text To Be Displayed*/ ); //Displ
    }
    else if(SensorValue[AutonDial] <3200/*SensorValue Starting W/ 0 From the Left*/ &&SensorValue[AutonDial] >2400/
        displayLCDCenteredString( 1/*0=Top Line, 1=Bottom Line*/ , "2nd Cub Right|L"/*Text To Be Displayed*/ ); //Displ
    }
    else if(SensorValue[AutonDial] >3200/*SensorValue Starting W/ 0 From the Left*/ ){//Farthest right side, have no
        displayLCDCenteredString( 1/*0=Top Line, 1=Bottom Line*/ , "No Auton|L"/*Text To Be Displayed*/ ); //Display "
    }
}
////////////////////////////////////

//Right Side//
////////////////////////////////////
else{//When "autonside" is not on the left(basically on the right side)//
    if(SensorValue[AutonDial] <800/*SensorValue Starting W/ 0 From the Left*/ ){//The farthest left side. Display no s
        displayLCDCenteredString( 1/*0=Top Line, 1=Bottom Line*/ , "No 2nd Cub|R"/*Text To Be Displayed*/ );//Display
    }
    else if(SensorValue[AutonDial] <1600/*SensorValue Starting W/ 0 From the Left*/ &&SensorValue[AutonDial] >800/*
        displayLCDCenteredString( 1/*0=Top Line, 1=Bottom Line*/ , "2nd Cub Left|R"/*Text To Be Displayed*/ ); //Displ
    }
    else if(SensorValue[AutonDial] <2400/*SensorValue Starting W/ 0 From the Left*/ &&SensorValue[AutonDial] >1600/
        displayLCDCenteredString( 1/*0=Top Line, 1=Bottom Line*/ , "2nd Cub Center|R"/*Text To Be Displayed*/ ); //Dis
    }
    else if(SensorValue[AutonDial] <3200/*SensorValue Starting W/ 0 From the Left*/ &&SensorValue[AutonDial] >2400/
        displayLCDCenteredString( 1/*0=Top Line, 1=Bottom Line*/ , "2nd Cub Right|R"/*Text To Be Displayed*/ ); //Displ
    }
    else if(SensorValue[AutonDial] >3200/*SensorValue Starting W/ 0 From the Left*/ ){//Farthest right side, have no
        displayLCDCenteredString( 1/*0=Top Line, 1=Bottom Line*/ , "No Auton|R"/*Text To Be Displayed*/ ); //Display "
    }
}
////////////////////////////////////

}

//
//
//User Control Task
//
// This task is used to control your robot during the user control phase of a VEX Competition.
// You must modify the code to add your own robot specific commands here.
```

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```
//
////////////////////////////////////
task usercontrol()
{
    bLCDBacklight=true;//Turn the LCD backlight on to show selected autons//
    startTask(showautons);//Start task "showautons" in order to display the currently selected auton//
    while (true)//Create an infinite-running loop//
    {

        //////////////////////////////////
        //Lift and Claw Control(A tad bit more advanced)//
        //////////////////////////////////

        //////////////////////////////////
        //Dump Position//
        //////////////////////////////////
        if(vexRT[ Btn6U/*Corresponding Button*/ ]== 1/*1=Pressed, 0=Released*/ ){//Btn 6U(Right-top bumper)//
            if((-SensorValue[LiftEnc]<110){//If the lift is below dump position, keep claw closed//
                motor[ClawL]=((SensorValue[LeftClawPot] -2700/*Width From Starting Pos.* / ) /5/*Sensitivity*/ );//Left claw being
                motor[ClawR]=((SensorValue[RightClawPot] -2700/*Width From Starting Pos.* / ) /5/*Sensitivity*/ );//Right claw bei
            }
            else{//When at or above dump position, open claw//
                motor[ClawL]=((SensorValue[LeftClawPot] -1200/*Width From Starting Pos.* / ) /10/*Sensitivity*/ ) ^2/*Slope*/ ;//
                motor[ClawR]=((SensorValue[RightClawPot] -1200/*Width From Starting Pos.* / ) /10/*Sensitivity*/ ) ^2/*Slope*/ ;//
            }
            //Lift PI control to position//
            motor[LiftL1]=(SensorValue[LiftEnc] +145/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ;//Left lift being ran b
            motor[LiftL2]=(SensorValue[LiftEnc] +145/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ;//Left lift being ran b
            motor[LiftR1]=(SensorValue[LiftEnc] +145/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ;//Right lift being ran
            motor[LiftR2]=(SensorValue[LiftEnc] +145/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ;//Right lift being ran
        }
        //////////////////////////////////

        //////////////////////////////////
        //Hold Up Position//
        //////////////////////////////////
        else if(vexRT[ Btn6D/*Corresponding Button*/ ]== 1/*1=Pressed, 0=Released*/ ){//Btn 6D(Right-bottom bumper)//
            //Make sure claw is closed//
            motor[ClawL]=((SensorValue[LeftClawPot] -2700/*Width From Starting Pos.* / ) /5/*Sensitivity*/ );//Left claw being
            motor[ClawR]=((SensorValue[RightClawPot] -2700/*Width From Starting Pos.* / ) /5/*Sensitivity*/ );//Right claw bei
            //Lift PI control to position//
            motor[LiftL1]=(SensorValue[LiftEnc] +50/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ;//Left lift being ran b
            motor[LiftL2]=(SensorValue[LiftEnc] +50/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ;//Left lift being ran b
            motor[LiftR1]=(SensorValue[LiftEnc] +50/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ;//Right lift being ran
            motor[LiftR2]=(SensorValue[LiftEnc] +50/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ;//Right lift being ran
        }
    }
}
```

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```
}
////////////////////////////////////

////////////////////////////////////
//Disable Lift and Claw motors//
////////////////////////////////////
else if(vexRT[ Btn7R/*Corresponding Button*/ ]== 1/*1=Pressed, 0=Released*/ ){//Btn 7R(Left buttonpad, right butto
    motor[ClawL]=0;//Stop Motor//
    motor[ClawR]=0;//Stop Motor//
    motor[LiftL1]=0;//Stop Motor//
    motor[LiftL2]=0;//Stop Motor//
    motor[LiftR1]=0;//Stop Motor//
    motor[LiftR2]=0;//Stop Motor//
}
////////////////////////////////////

////////////////////////////////////
//Down Position//
////////////////////////////////////
else{//When no lift buttons are pressed//
    if(vexRT[ Btn5U/*Corresponding Button*/ ]== 1/*1=Pressed, 0=Released*/ ){//Btn 5U(Left-top bumper)//
        motor[ClawL]=((SensorValue[LeftClawPot] -2700/*Width From Starting Pos.* / ) /5/*Sensitivity*/ );//Left claw being
        motor[ClawR]=((SensorValue[RightClawPot] -2700/*Width From Starting Pos.* / ) /5/*Sensitivity*/ );//Right claw bei
    }
    else{//When no button is pressed, open the claw//
        motor[ClawL]=((SensorValue[LeftClawPot] -1200/*Width From Starting Pos.* / ) /10/*Sensitivity*/ ) ^2/*Slope*/ ;//
        motor[ClawR]=((SensorValue[RightClawPot] -1200/*Width From Starting Pos.* / ) /10/*Sensitivity*/ ) ^2/*Slope*/ ;//
    }
    //Lift PI control to position//
    motor[LiftL1]=(SensorValue[LiftEnc] -2/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ;//Left lift being ran by
    motor[LiftL2]=(SensorValue[LiftEnc] -2/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ;//Left lift being ran by
    motor[LiftR1]=(SensorValue[LiftEnc] -2/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ;//Right lift being ran by
    motor[LiftR2]=(SensorValue[LiftEnc] -2/*Height From Starting Pos.* / ) *4/*Sensitivity*/ ;//Right lift being ran by
}
////////////////////////////////////

////////////////////////////////////
//Drivetrain Code(Simple and easy) //
////////////////////////////////////
motor[Left1]=vexRT[ Ch3/*Corresponding Channel(F/B)* / ]+vexRT[ Ch1/*Corresponding Channel(L/R)* / ]; //The front
motor[Left2]=vexRT[ Ch3/*Corresponding Channel(F/B)* / ]+vexRT[ Ch1/*Corresponding Channel(L/R)* / ]; //The back-l
motor[Right1]=vexRT[ Ch3/*Corresponding Channel(F/B)* / ]-vexRT[ Ch1/*Corresponding Channel(L/R)* / ]; //The front-r
motor[Right2]=vexRT[ Ch3/*Corresponding Channel(F/B)* / ]-vexRT[ Ch1/*Corresponding Channel(L/R)* / ]; //The back-rig
////////////////////////////////////
}
```


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}

