```
#include "robot-config.h"
#include <iostream>


int apexSpeedPCT = 50;                              //global vars
int armParallelSpeedPCT=100;
int armParallelPositionDEG=45;
int armExtendedSpeedPCT=100;
int armExtendedPositionDEG=135;
int manualArmSpeedPCT=80;
int armAutoReturnSpeedPCT=100;

int step=-1;                                        //for auton motor
 position seeking
double seek=-1;
double currentPos=0;
double speed=0;

//competition object
vex::competition Competition;


void pre_auton( void ) {
}

void autonomous( void ) {
    //1 Drive backward to push ball to MultiBot
    LeftMotor1.rotateFor(-1.273, vex::rotationUnits::rev, 80,
     vex::velocityUnits::pct, false);
    LeftMotor2.rotateFor(-1.273, vex::rotationUnits::rev, 80,
     vex::velocityUnits::pct, false);
    LeftMotor3.rotateFor(-1.273, vex::rotationUnits::rev, 80,
     vex::velocityUnits::pct, false);
    RightMotor1.rotateFor(-1.273, vex::rotationUnits::rev, 80,
     vex::velocityUnits::pct, false);
    RightMotor2.rotateFor(-1.273, vex::rotationUnits::rev, 80,
     vex::velocityUnits::pct, false);
    RightMotor3.rotateFor(-1.273, vex::rotationUnits::rev, 80,
     vex::velocityUnits::pct, false);
    vex::task::sleep(1000);
    //2 Drive forward to line up for cap
    LeftMotor1.rotateFor(1450, vex::rotationUnits::deg, 80,
     vex::velocityUnits::pct, false);
    LeftMotor2.rotateFor(1450, vex::rotationUnits::deg, 80,
     vex::velocityUnits::pct, false);
    LeftMotor3.rotateFor(1450, vex::rotationUnits::deg, 80,
     vex::velocityUnits::pct, false);
    RightMotor1.rotateFor(1450, vex::rotationUnits::deg, 80,
     vex::velocityUnits::pct, false);
```

```
RightMotor2.rotateFor(1450, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
RightMotor3.rotateFor(1450, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
vex::task::sleep(2000);
//3 Turn to face cap
LeftMotor1.rotateFor(-295, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
LeftMotor2.rotateFor(-295, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
LeftMotor3.rotateFor(-295, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
RightMotor1.rotateFor(295, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
RightMotor2.rotateFor(295, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
RightMotor3.rotateFor(295, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
vex::task::sleep(1000);
//4 Drive to hit cap
LeftMotor1.spin(vex::directionType::rev, 50,
 vex::velocityUnits::pct); //(Axis3+Axis1)
LeftMotor2.spin(vex::directionType::rev, 50,
 vex::velocityUnits::pct); //(Axis3+Axis1)
LeftMotor3.spin(vex::directionType::rev, 50,
 vex::velocityUnits::pct); //(Axis3+Axis1)
RightMotor1.spin(vex::directionType::rev, 50,
 vex::velocityUnits::pct);//(Axis3-Axis1)
RightMotor2.spin(vex::directionType::rev, 50,
 vex::velocityUnits::pct);//(Axis3-Axis1)
RightMotor3.spin(vex::directionType::rev, 50,
 vex::velocityUnits::pct);//(Axis3-Axis1)
vex::task::sleep(500);
//4.33 Stop driving
LeftMotor1.spin(vex::directionType::fwd, 0,
 vex::velocityUnits::pct); //(Axis3+Axis1)
LeftMotor2.spin(vex::directionType::fwd, 0,
 vex::velocityUnits::pct); //(Axis3+Axis1)
LeftMotor3.spin(vex::directionType::fwd, 0,
 vex::velocityUnits::pct); //(Axis3+Axis1)
RightMotor1.spin(vex::directionType::fwd, 0,
 vex::velocityUnits::pct);//(Axis3-Axis1)
RightMotor2.spin(vex::directionType::fwd, 0,
 vex::velocityUnits::pct);//(Axis3-Axis1)
RightMotor3.spin(vex::directionType::fwd, 0,
 vex::velocityUnits::pct);//(Axis3-Axis1)
vex::task::sleep(1000);
//4.66 Turn to face next cap
LeftMotor1.rotateFor(10, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
```

```
LeftMotor2.rotateFor(10, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
LeftMotor3.rotateFor(10, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
RightMotor1.rotateFor(-10, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
RightMotor2.rotateFor(-10, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
RightMotor3.rotateFor(-10, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
vex::task::sleep(1000);

//5 Drive forward to cap
LeftMotor1.rotateFor(1440, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
LeftMotor2.rotateFor(1440, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
LeftMotor3.rotateFor(1440, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
RightMotor1.rotateFor(1440, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
RightMotor2.rotateFor(1440, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
RightMotor3.rotateFor(1440, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
vex::task::sleep(2000);
//6 Move arm to flip cap
ApexMotor1.startRotateTo(-275,vex::rotationUnits::deg, 100,
 vex::velocityUnits::pct);//up
vex::task::sleep(500);
ApexMotor1.startRotateTo(-100,vex::rotationUnits::deg, 100,
 vex::velocityUnits::pct);//down
vex::task::sleep(300);
ApexMotor1.startRotateTo(0, vex::rotationUnits::deg, 25,
 vex::velocityUnits::pct);//down slower
vex::task::sleep(300);
//7 Turn to face wall
LeftMotor1.rotateFor(-170, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
LeftMotor2.rotateFor(-170, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
LeftMotor3.rotateFor(-170, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
RightMotor1.rotateFor(170, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
RightMotor2.rotateFor(170, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
RightMotor3.rotateFor(170, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
vex::task::sleep(1000);
//8 Drive to line up on wall
```

```
LeftMotor1.rotateFor(710, vex::rotationUnits::deg, 100,
 vex::velocityUnits::pct, false);
LeftMotor2.rotateFor(710, vex::rotationUnits::deg, 100,
 vex::velocityUnits::pct, false);
LeftMotor3.rotateFor(710, vex::rotationUnits::deg, 100,
 vex::velocityUnits::pct, false);
RightMotor1.rotateFor(710, vex::rotationUnits::deg, 100,
 vex::velocityUnits::pct, false);
RightMotor2.rotateFor(710, vex::rotationUnits::deg, 100,
 vex::velocityUnits::pct, false);
RightMotor3.rotateFor(710, vex::rotationUnits::deg, 100,
 vex::velocityUnits::pct, false);
vex::task::sleep(1000);
//9 Turn a little
LeftMotor1.rotateFor(-710, vex::rotationUnits::deg, 100,
 vex::velocityUnits::pct, false);
LeftMotor2.rotateFor(-710, vex::rotationUnits::deg, 100,
 vex::velocityUnits::pct, false);
LeftMotor3.rotateFor(-710, vex::rotationUnits::deg, 100,
 vex::velocityUnits::pct, false);
RightMotor1.rotateFor(-710, vex::rotationUnits::deg, 100,
 vex::velocityUnits::pct, false);
RightMotor2.rotateFor(-710, vex::rotationUnits::deg, 100,
 vex::velocityUnits::pct, false);
RightMotor3.rotateFor(-710, vex::rotationUnits::deg, 100,
 vex::velocityUnits::pct, false);
vex::task::sleep(1000);
//10 Turn to face platform
LeftMotor1.rotateFor(443, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
LeftMotor2.rotateFor(443, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
LeftMotor3.rotateFor(443, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
RightMotor1.rotateFor(-443, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
RightMotor2.rotateFor(-443, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
RightMotor3.rotateFor(-443, vex::rotationUnits::deg, 80,
 vex::velocityUnits::pct, false);
vex::task::sleep(1000);
//10.5 Drive to platform
LeftMotor1.spin(vex::directionType::fwd, 100,
 vex::velocityUnits::pct); //(Axis3+Axis1)
LeftMotor2.spin(vex::directionType::fwd, 100,
 vex::velocityUnits::pct); //(Axis3+Axis1)
LeftMotor3.spin(vex::directionType::fwd, 100,
 vex::velocityUnits::pct); //(Axis3+Axis1)
RightMotor1.spin(vex::directionType::fwd, 100,
 vex::velocityUnits::pct);//(Axis3-Axis1)
```

```
RightMotor2.spin(vex::directionType::fwd, 100,
 vex::velocityUnits::pct);//(Axis3-Axis1)
RightMotor3.spin(vex::directionType::fwd, 100,
 vex::velocityUnits::pct);//(Axis3-Axis1)
vex::task::sleep(500);

//11 Stop driving
LeftMotor1.spin(vex::directionType::fwd, 0,
 vex::velocityUnits::pct); //(Axis3+Axis1)
LeftMotor2.spin(vex::directionType::fwd, 0,
 vex::velocityUnits::pct); //(Axis3+Axis1)
LeftMotor3.spin(vex::directionType::fwd, 0,
 vex::velocityUnits::pct); //(Axis3+Axis1)
RightMotor1.spin(vex::directionType::fwd, 0,
 vex::velocityUnits::pct);//(Axis3-Axis1)
RightMotor2.spin(vex::directionType::fwd, 0,
 vex::velocityUnits::pct);//(Axis3-Axis1)
RightMotor3.spin(vex::directionType::fwd, 0,
 vex::velocityUnits::pct);//(Axis3-Axis1)
vex::task::sleep(23000);


//11.5 Drive up platform
LeftMotor1.spin(vex::directionType::rev, 100,
 vex::velocityUnits::pct); //(Axis3+Axis1)
LeftMotor2.spin(vex::directionType::rev, 100,
 vex::velocityUnits::pct); //(Axis3+Axis1)
LeftMotor3.spin(vex::directionType::rev, 100,
 vex::velocityUnits::pct); //(Axis3+Axis1)
RightMotor1.spin(vex::directionType::rev, 100,
 vex::velocityUnits::pct);//(Axis3-Axis1)
RightMotor2.spin(vex::directionType::rev, 100,
 vex::velocityUnits::pct);//(Axis3-Axis1)
RightMotor3.spin(vex::directionType::rev, 100,
 vex::velocityUnits::pct);//(Axis3-Axis1)
vex::task::sleep(2000);

//12 Stop driving
LeftMotor1.spin(vex::directionType::fwd, 0,
 vex::velocityUnits::pct); //(Axis3+Axis1)
LeftMotor2.spin(vex::directionType::fwd, 0,
 vex::velocityUnits::pct); //(Axis3+Axis1)
LeftMotor3.spin(vex::directionType::fwd, 0,
 vex::velocityUnits::pct); //(Axis3+Axis1)
RightMotor1.spin(vex::directionType::fwd, 0,
 vex::velocityUnits::pct);//(Axis3-Axis1)
RightMotor2.spin(vex::directionType::fwd, 0,
 vex::velocityUnits::pct);//(Axis3-Axis1)
RightMotor3.spin(vex::directionType::fwd, 0,
 vex::velocityUnits::pct);//(Axis3-Axis1)
vex::task::sleep(23000);
```

```
}



/*
 Brings arm up, then brings it down. (arm goes higher up w/ more
  negative numbers)
 Enabled w/ usercontrol
 */
void armcontrol(void) {
    ApexMotor1.startRotateTo(-250,vex::rotationUnits::deg, 100,
     vex::velocityUnits::pct);//up
    vex::task::sleep(500);
    ApexMotor1.startRotateTo(-100,vex::rotationUnits::deg, 100,
     vex::velocityUnits::pct);//down
    vex::task::sleep(300);
    ApexMotor1.startRotateTo(0, vex::rotationUnits::deg, 25,
     vex::velocityUnits::pct);//down slower
    vex::task::sleep(300);
}

/*For opcontrol/ non-autonomous purposes*/
void usercontrol( void ) {
    //Enable arm
    armcontrol();

    //Drive Control: Arcade Mode
    while (1) {
        LeftMotor1.spin(vex::directionType::fwd,
         (Controller1.Axis3.value() + Controller1.Axis1.value()/2),
         vex::velocityUnits::pct); //(Axis3+Axis1)
        LeftMotor2.spin(vex::directionType::fwd,
         (Controller1.Axis3.value() + Controller1.Axis1.value()/2),
         vex::velocityUnits::pct); //(Axis3+Axis1)
        LeftMotor3.spin(vex::directionType::fwd,
         (Controller1.Axis3.value() + Controller1.Axis1.value()/2),
         vex::velocityUnits::pct); //(Axis3+Axis1)
        RightMotor1.spin(vex::directionType::fwd,
         (Controller1.Axis3.value() - Controller1.Axis1.value()/2),
         vex::velocityUnits::pct);//(Axis3-Axis1)
        RightMotor2.spin(vex::directionType::fwd,
         (Controller1.Axis3.value() - Controller1.Axis1.value()/2),
         vex::velocityUnits::pct);//(Axis3-Axis1)
        RightMotor3.spin(vex::directionType::fwd,
         (Controller1.Axis3.value() - Controller1.Axis1.value()/2),
         vex::velocityUnits::pct);//(Axis3-Axis1)

        vex::task::sleep(20); //Prevents wasted resources.
    }
}
```

```
int main() {
    pre_auton();

    //Set up callbacks for autonomous and driver control periods.
    Competition.autonomous( autonomous );
    Competition.drivercontrol( usercontrol );

    //Prevent main from exiting with an infinite loop.
    while(1) {
        vex::task::sleep(100);//Sleep the task for a short amount of
         time to prevent wasted resources.
    }

}
```