**cal.cpp**

#include " cal.h"

#include "ui\_cal.h"

#include <QString>

#include <QLabel>

#include <QSerialPort>

#include <QSerialPortInfo>

#include <QDebug>

#include <QCoreApplication>

#include “iostream”

#include <cmath>

cal::cal(QWidget\* parent): QMainWindow(parent), ui(new Ui::cal){

//naming buttons

ui->setupUi (this) ;

ui -> Display -> setText(“”);

QPushButton \* numButtons [10];

for (int i = 0;i <10 ;i++){

QString butName = "pushButton" + QString::number(i);

numButtons[i] = cal::findChild<QPushButton \*>(butName);

connect(numButtons[i], SIGNAL(released()), this, SLOT(NumPressed()));

}

//connecting buttons

connect (ui->pushButton\_ADD, SIGNAL(released ()), this, SLOT (OperButPressed()));

connect(ui->pushButton\_SUB, SIGNAL (released()), this,SLOT (OperButPressed())):

connect (ui->pushButton\_MUL, SIGNAL (released ( )) , this, SLOT(OperButPressed ()));

connect (ui->pushButton\_DIV, SIGNAL (released()), this,SLOT (OperButPressed()));

connect (ui->pushButton\_EQ, SIGNAL (released ()), this, SLOT (EQButPressed0)));

connect (ui->pushButton\_AC, SIGNAL(released ()) , this, SLOT (ACButPressed()));

connect (ui ->sine, SIGNAL (released ()), this, SLOT (OperButPressed ())) ;

connect (ui->cosine, SIGNAL (released ()), this, SLOT (OperButPressed() )) ;

connect (ui->sq, SIGNAL (released ()) , this, SLOT (OperButPressed ())) ;

connect (ui-> sqr, SIGNAL(released()), this, SLOT (OperButPressed ()));

}

cal::~cal ()

{

delete ui;

}

void cal:: NumPressed() {

QPushButton \* button = (QPushButton \* ) sender () ;

QString butVal = button -> text() ;

QString displayVal = ui-> Display -> text() ;

if((displayVal.toDouble() == 0) || (displayVal.toDouble() == 0.0)){

ui -> Display-> setText (butVal)

else{

QString newVal = displayVal + butVal

double dblNewVal - newVal. toDouble () ;

ui -> Display -> setText(QString::number(dblNewVal, 'g' , 16)) ;

}}

void cal:: OperButPressed () {

//initializations

Div = false;

Mul = false;

Add = false;

Sub = false;

gsine = false;

gcosine = false;

square = false;

squareroot = false;

QString displayVal = ui -> Display -> text ();

calcVal = displayVal. toDouble () ;

QPushButton \* button = (QPushButton \* ) sender () ;

QString butVal - button -> text() ;

QString add = “+”;

QString sub = “-”;

QString mul = “\*”;

QString div = “/”;

QString s = "sine";

QString c = "cosine";

QString sqro = "square";

QString squa = "'squareRoot";

if(QString:: compare (butVal, div, Qt: :CaseInsensitive) == 0) {

Div = true; }

else if (QString:: compare (butVal, add, Qt: :CaseInsensitive) == 0) {

Add = true; }

else if(QString::compare(butVal, sub, Qt: :CaseInsensitive)== 0) {

Sub = true; }

else if (QString:: compare (butVal, mul, Qt: : CaseInsensitive) == 0) {

Mul = true; }

else if (QString: :compare (butVal, s, Qt: :CaseInsensitive) == 0) {

gsine = true; }

else if(QString::compare (butVal, c, Qt: :CaseInsensitive) == 0) {

gcosine = true; }

else if(QString::compare (butVal, sqro, Qt: : CaseInsensitive) == 0) {

square = true; }

else if (QString: :compare(butVal, squa, Qt: :CaseInsensitive) =- 0) {

squareroot = true; }

ui-> Display -> setText("");

void cal::EQButPressed () {

QString port\_name = "COM2";

serial.close();

serial. setPortName (port\_name) :

result = 0.0;

QString displayVal - ui-> Display-> text() ;

double dblDisplayVal = displayVal. toDouble ();

if(Add|| Sub ||Mul || Div || gsine || gcosine || square || squareroot) {

if (Add) {

result = calcVal + dblDisplayVal; }

else if (Sub) {

result = calcVal - dblDisplavVal; }

else if (Mul) {

result = calcVal \* dblDisplayVal; }

else if (Div) {

result = calcVal / dblDisplayVal; }

else if (gsine) {

result = std::sin (calcVal); }

else if (gcosine) {

result = std::cos (calcVal); }

else if (square){

result = std:: pow (caleVal, 2) ; }

else if (squareroot) {

result = std:: sgrt (calcVal);}

ui -> Display-> setText(QString::number (result));

if (serial.open (QIODevice: :ReadWrite)) {

qDebug() < "button 1 is pressed but serial port has error" << (serial.error () );

return;

else

{

qDebug () << "serial opened fine":

QString a = "result is: " + QString: :number (result);

const QByteArray requestData = a. toUtf8 ()

serial.write (requestData);

if (serial. waitForBytesWritten (1000) {}

void cal:: ACButPressed () {

result = 0.0,

QString displayVal = “0”;

ui -> Display -> setText("'') ;

—--------------------------------------------------------------------------------------------------------------

**cal.h**

#ifndef CALC\_H

#define CALC\_H

#include <QMainWindow>

#include <QMainWindow>

#include <QString>

#include <QtSerialPort/QSerialPort>

#include <QtSerialPort/QSerialPortInfo>

#include < QObject>

#include <QPushButton>

QT\_BEGIN\_NAMESPACE

namespace Ui {class cal; }

QT\_ END\_ NAMESPACE

class cal : public QMainWindow

{

Q\_OBJECT

public:

cal (QWidget \*parent = nullptr);

~ cal();

QSerialPort serial;

bool Add; bool Sub;

bool Div;

bool Mul;

bool gsine;

bool gcosine;

bool square;

bool squareroot;

double result;

double calcVal;

QPushButton sine;

QPushButton cosine;

QPushButton sq;

QPushButton sqr;

private:

Ui::cal \*ui;

public slots:

void NumPressed() ;

void OperButPressed() ;

void EQButPressed() ;

void ACButPressed() ;

#endif // CAL\_H