**МИНОБРНАУКИ РОССИИ**

**Санкт-Петербургский государственный**

**электротехнический университет**

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**Кафедра РАПС**

отчет

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Темы: «Классы, инкапсуляция»

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**Код разработанных классов**

class Datchik

{

public:

float data[6];

int Xloc, Yloc;

string name;

bool state;

protected:

void DataUpdate();

};

class Termo: public Datchik

{ public:

Termo(int xloc, int yloc, float t0) {

name = "Термометр";

Xloc = xloc;

Yloc = yloc;

data[0] = t0;

for(int i=1;i<6;i++){

int a = rand()%7;

int b = rand()%10;

if(b==5){state =false;}

else {state = true;}

switch(a){

case 1: data[i] = data[i-1]-2; break;

case 2: data[i] = data[i-1]-1; break;

case 3: data[i] = data[i-1]-1; break;

case 4: data[i] = data[i-1]; break;

case 5: data[i] = data[i-1]+1; break;

case 6: data[i] = data[i-1]+1; break;

case 7: data[i] = data[i-1]+2; break;

default: data[i] = data[i-1]; break; }

}

}

void DataUpdate(){

for(int i=0;i<5;i++) { data[i]=data[i+1];}

int a = rand()%7;

switch(a){

case 1: data[5] = data[4]-2; break;

case 2: data[5] = data[4]-1; break;

case 3: data[5] = data[4]-1; break;

case 4: data[5] = data[4]; break;

case 5: data[5] = data[4]+1; break;

case 6: data[5] = data[4]+1; break;

case 7: data[5] = data[4]+2; break;

default: data[5] = data[4]; break; }

}

};

class Baro: public Datchik

{

public:

Baro(int xloc, int yloc, float p0) {

name = "Барометр";

Xloc = xloc;

Yloc = yloc;

data[0] = p0;

for(int i=1;i<6;i++){

int a = rand()%9;

int b = rand()%10;

if(b==5){state =false;}

else {state = true;}

switch(a){

case 1: data[i] = data[i-1]-5; break;

case 2: data[i] = data[i-1]-3; break;

case 3: data[i] = data[i-1]-2; break;

case 4: data[i] = data[i-1]-1; break;

case 5: data[i] = data[i-1]; break;

case 6: data[i] = data[i-1]+1; break;

case 7: data[i] = data[i-1]+2; break;

case 8: data[i] = data[i-1]+3; break;

case 9: data[i] = data[i-1]+5; break;

default: data[i] = data[i-1]; break; }

}

}

virtual void DataUpdate(){

for(int i=0;i<5;i++) { data[i]=data[i+1];}

int a = rand()%9;

switch(a){

case 1: data[5] = data[4]-5; break;

case 2: data[5] = data[4]-3; break;

case 3: data[5] = data[4]-2; break;

case 4: data[5] = data[4]-1; break;

case 5: data[5] = data[4]; break;

case 6: data[5] = data[4]+1; break;

case 7: data[5] = data[4]+2; break;

case 8: data[5] = data[4]+3; break;

case 9: data[5] = data[4]+5; break;

default: data[5] = data[4]; break; }

}

};

class Anemo: public Datchik

{

public:

Anemo(int xloc, int yloc, float a0) {

name = "Анемометр";

Xloc = xloc;

Yloc = yloc;

data[0] = a0;

for(int i=1;i<6;i++){

int a = rand()%7;

int b = rand()%10;

if(b==5){state =false;}

else {state = true;}

switch(a){

case 1: data[i] = data[i-1]-3; break;

case 2: data[i] = data[i-1]-2; break;

case 3: data[i] = data[i-1]-1; break;

case 4: data[i] = data[i-1]; break;

case 5: data[i] = data[i-1]+1; break;

case 6: data[i] = data[i-1]+2; break;

case 7: data[i] = data[i-1]+3; break;

default: data[i] = data[i-1]; break; }

if(data[i] <=0){data[i]=0;}

}

}

void DataUpdate(){

for(int i=0;i<5;i++) { data[i]=data[i+1];}

int a = rand()%7;

switch(a){

case 1: data[5] = data[4]-3; break;

case 2: data[5] = data[4]-2; break;

case 3: data[5] = data[4]-1; break;

case 4: data[5] = data[4]; break;

case 5: data[5] = data[4]+1; break;

case 6: data[5] = data[4]+2; break;

case 7: data[5] = data[4]+3; break;

default: data[5] = data[4]; break; }

if(data[5] <=0){data[5]=0;}

}

};

class Wetness: public Datchik

{

public:

Wetness(int xloc, int yloc, float w0) {

name = "Датчик влажности";

Xloc = xloc;

Yloc = yloc;

data[0] =w0\*100;

if (data[0]>100) {data[0]=100;}

if (data[0]<0) {data[0]=0;}

for(int i=1;i<6;i++) {

int a = rand()%5;

int b = rand()%10;

if(b==5){state =false;}

else {state = true;}

switch(a){

case 1: data[i] = data[i-1]-5; break;

case 2: data[i] = data[i-1]-3; break;

case 3: data[i] = data[i-1]; break;

case 4: data[i] = data[i-1]+3; break;

case 5: data[i] = data[i-1]+5; break;

default: data[i] = data[i-1]; break; }

if (data[0]>100) {data[0]=100;}

if (data[0]<0) {data[0]=0;} }

}

void DataUpdate(){

for(int i=0;i<5;i++) { data[i]=data[i+1];}

int a = rand()%5;

switch(a){

case 1: data[5] = data[4]-5; break;

case 2: data[5] = data[4]-3; break;

case 3: data[5] = data[4]; break;

case 4: data[5] = data[4]+3; break;

case 5: data[5] = data[4]+5; break;

default: data[5] = data[4]; break; }

if (data[0]>1) {data[0]=100;}

if (data[0]<0) {data[0]=0;}}

};