2022

ECOLE NORMALE SUPÉRIEURE DE L'ENSEIGNEMENT TECHNIQUE

DE MOHAMMEDIA

- UNIVERSITÉ HASSAN II DE CASABLANCA

TP5 : programmation orientée objet en c++

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ENSET

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- REALISER PAR :
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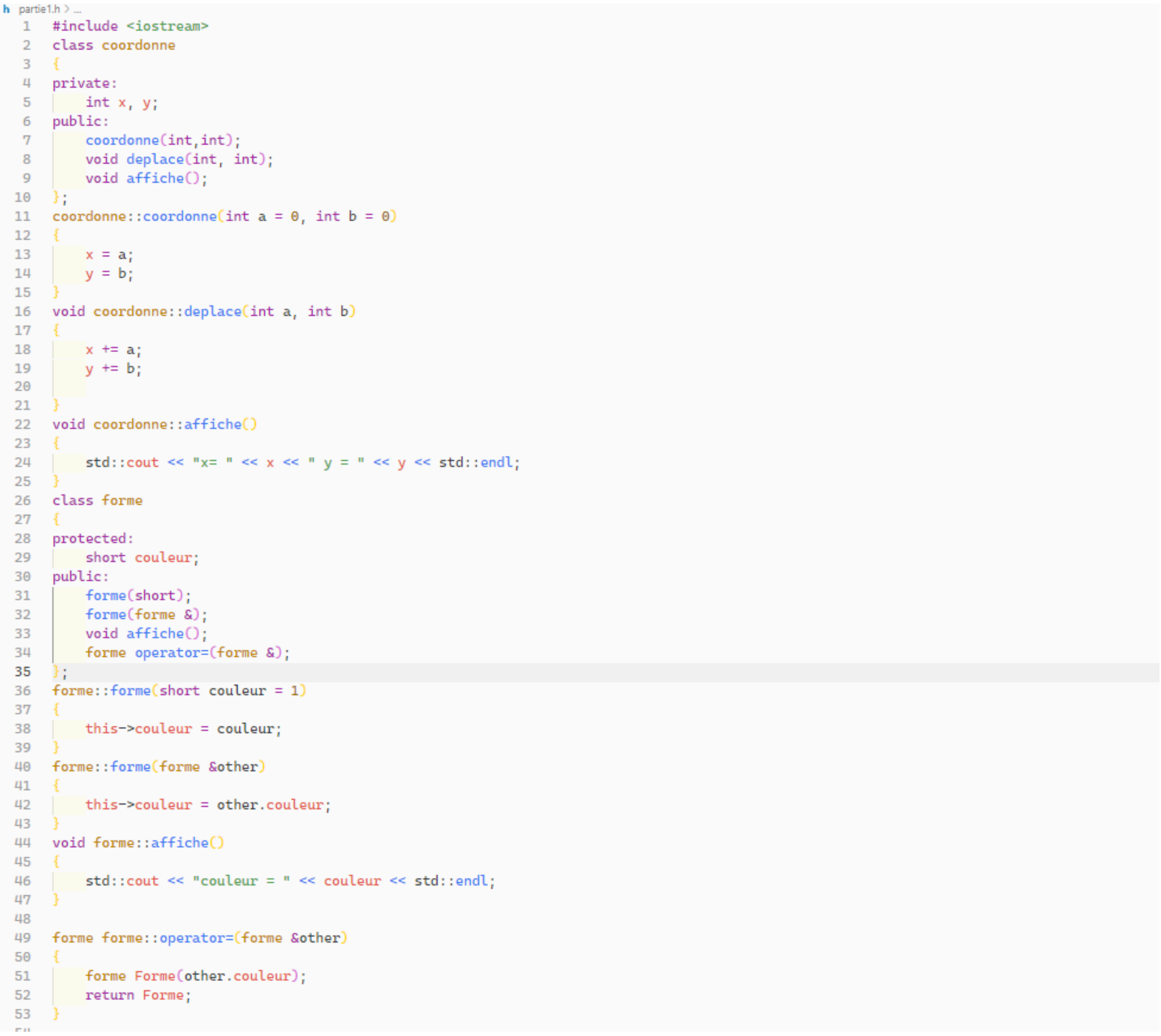
PARTIE 1

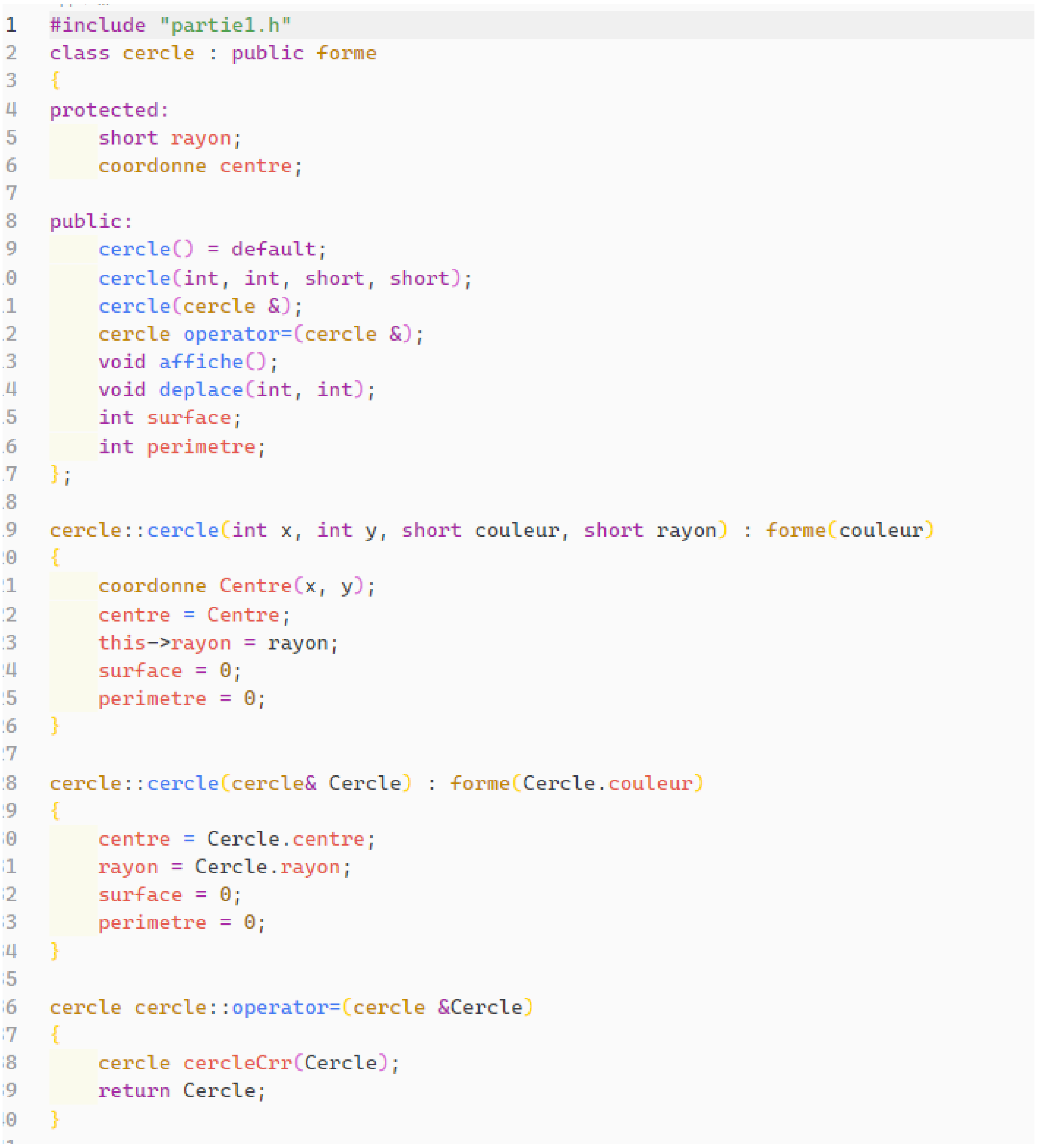
LE CODE



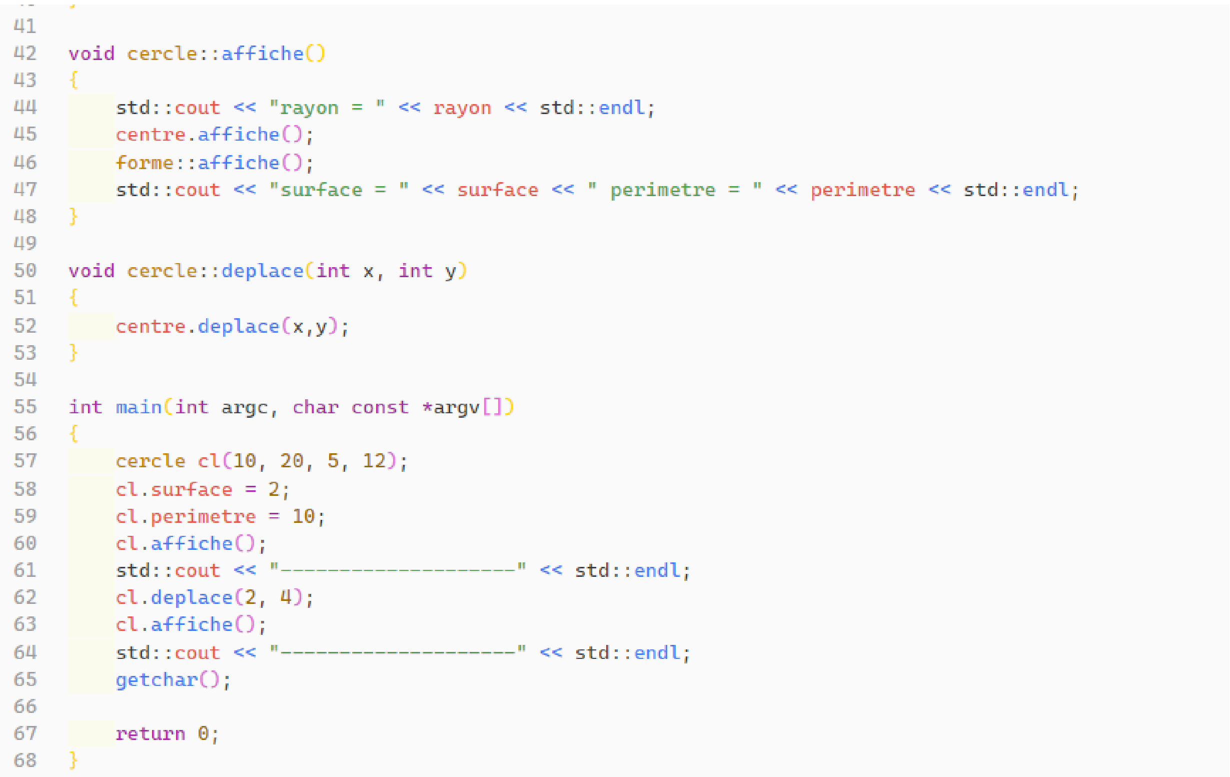
```
#include <iostream>
class coordonne
{
private:
    int x, y;
public:
    coordonne(int,int);
    void deplace(int, int);
    void affiche();
};
coordonne::coordonne(int a = 0, int b = 0)
{
    x = a;
    y = b;
}
void coordonne::deplace(int a, int b)
{
    x += a;
    y += b;

}
void coordonne::affiche()
{
    std::cout << "x= " << x << " y = " << y << std::endl;
}
class forme
{
protected:
    short couleur;
public:
    forme(short);
    forme(forme &);
    void affiche();
    forme operator=(forme &);
};
forme::forme(short couleur = 1)
{
    this->couleur = couleur;
}
forme::forme(forme &other)
{
    this->couleur = other.couleur;
}
void forme::affiche()
{
    std::cout << "couleur = " << couleur << std::endl;
}

forme forme::operator=(forme &other)
{
    forme Forme(other.couleur);
    return Forme;
}
```

PARTIE 2

LE CODE

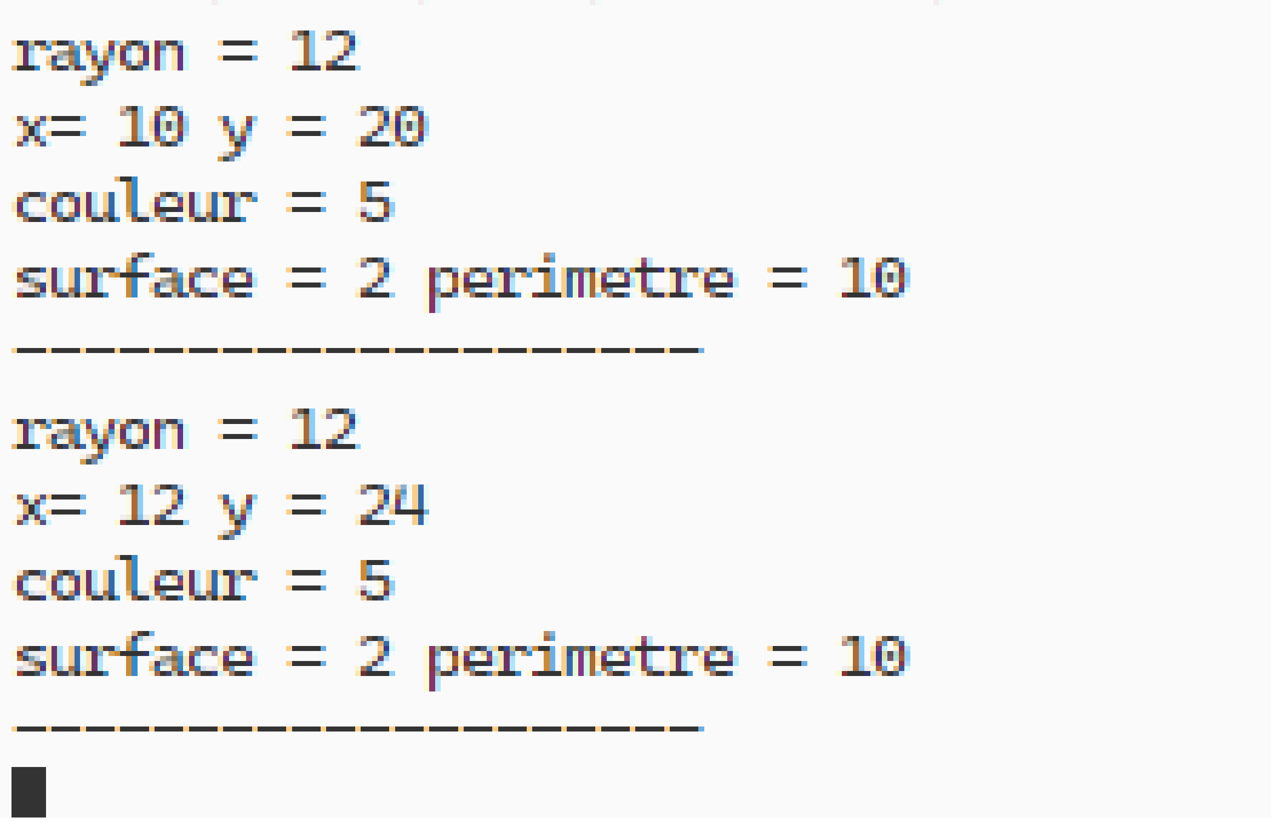


```cpp
#include "partie1.h"
class cercle : public forme
{
protected:
    short rayon;
    coordonne centre;

public:
    cercle() = default;
    cercle(int, int, short, short);
    cercle(cercle &);
    cercle operator=(cercle &);
    void affiche();
    void deplace(int, int);
    int surface;
    int perimetre;
};

cercle::cercle(int x, int y, short couleur, short rayon) : forme(couleur)
{
    coordonne Centre(x, y);
    centre = Centre;
    this->rayon = rayon;
    surface = 0;
    perimetre = 0;
}

cercle::cercle(cercle& Cercle) : forme(Cercle.couleur)
{
    centre = Cercle.centre;
    rayon = Cercle.rayon;
    surface = 0;
    perimetre = 0;
}

cercle cercle::operator=(cercle &Cercle)
{
    cercle cercleCrr(Cercle);
    return Cercle;
}
```



```cpp

void cercle::affiche()
{
    std::cout << "rayon = " << rayon << std::endl;
    centre.affiche();
    forme::affiche();
    std::cout << "surface = " << surface << " perimetre = " << perimetre << std::endl;
}

void cercle::deplace(int x, int y)
{
    centre.deplace(x,y);
}

int main(int argc, char const *argv[])
{
    cercle cl(10, 20, 5, 12);
    cl.surface = 2;
    cl.perimetre = 10;
    cl.affiche();
    std::cout << "--------------------" << std::endl;
    cl.deplace(2, 4);
    cl.affiche();
    std::cout << "--------------------" << std::endl;
    getchar();

    return 0;
}
```

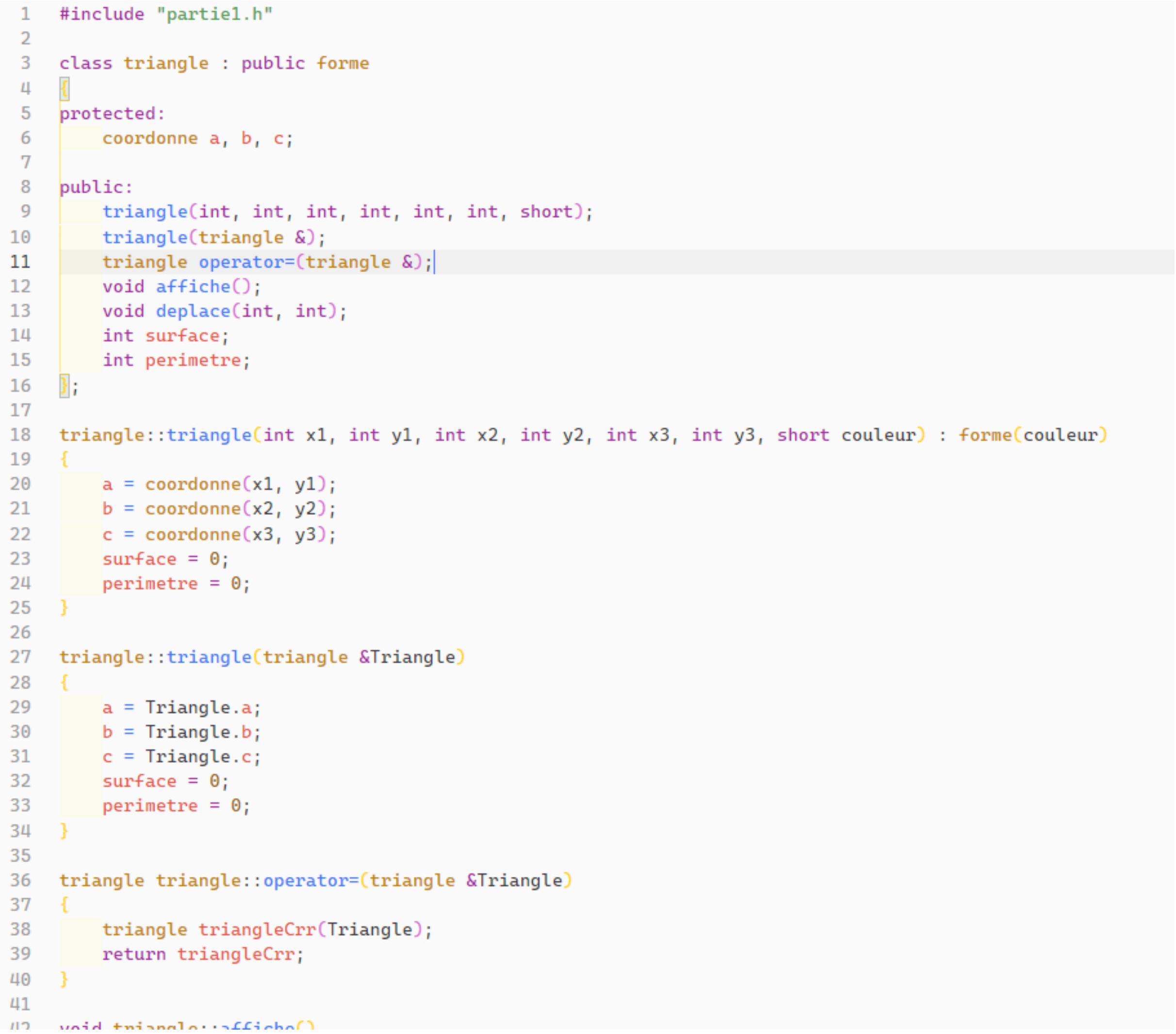
L'EXECUTION



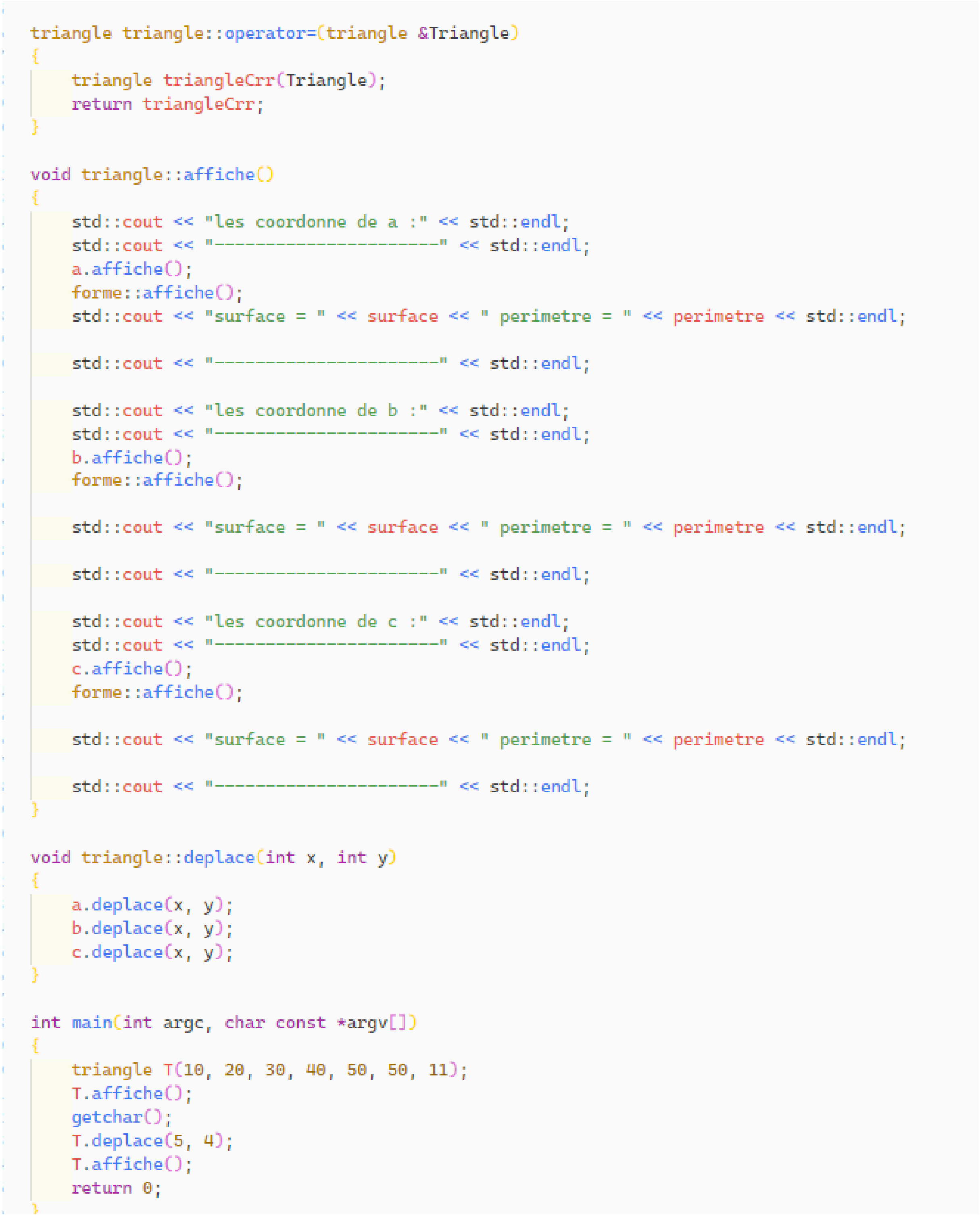
```
rayon = 12
x= 10 y = 20
couleur = 5
surface = 2 perimetre = 10
--------------------
rayon = 12
x= 12 y = 24
couleur = 5
surface = 2 perimetre = 10
--------------------
█
```

PARTIE 3

LE CODE

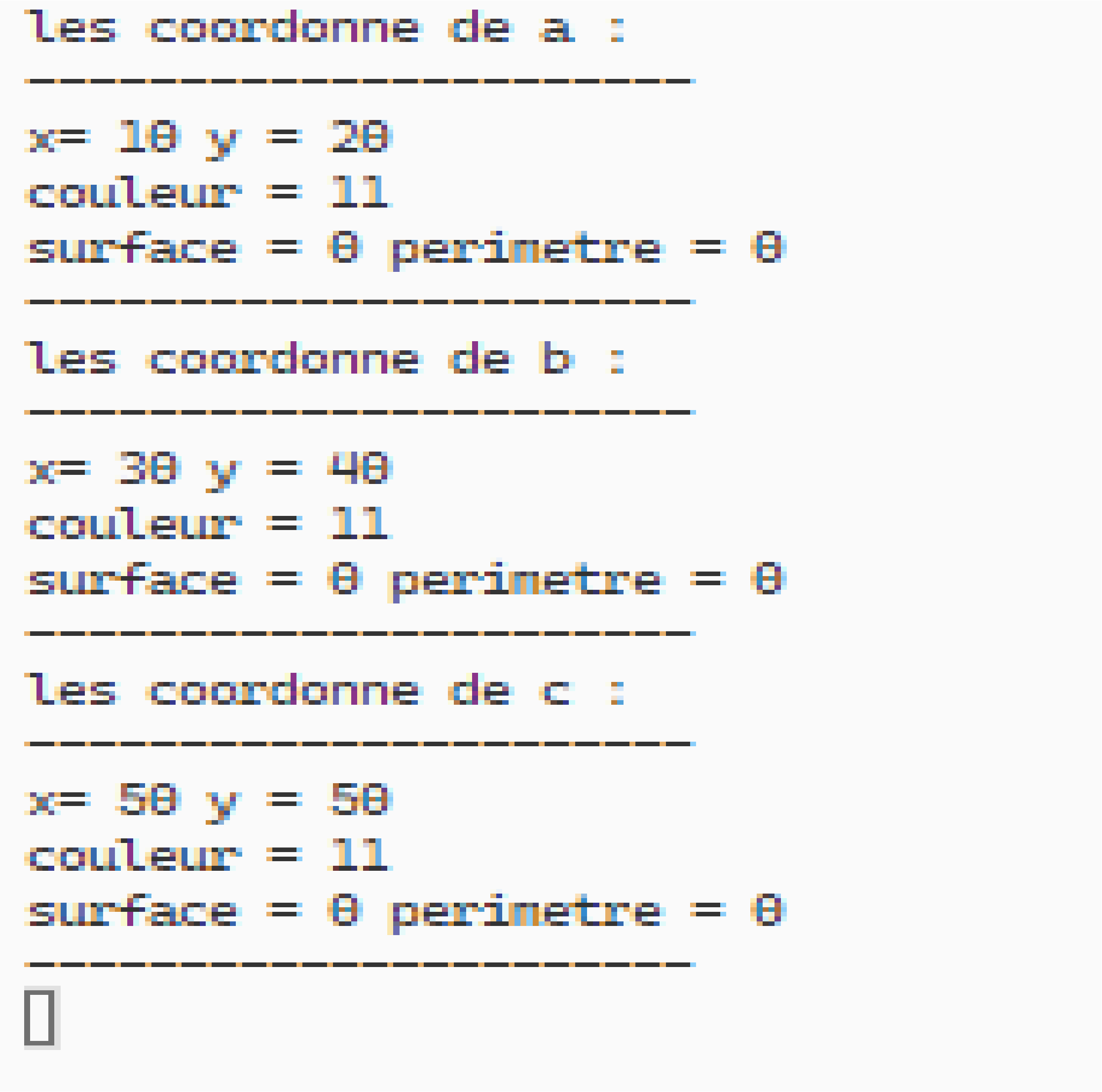


```
#include "partie1.h"

class triangle : public forme
{
protected:
    coordonne a, b, c;

public:
    triangle(int, int, int, int, int, int, short);
    triangle(triangle &);
    triangle operator=(triangle &);
    void affiche();
    void deplace(int, int);
    int surface;
    int perimetre;
};

triangle::triangle(int x1, int y1, int x2, int y2, int x3, int y3, short couleur) : forme(couleur)
{
    a = coordonne(x1, y1);
    b = coordonne(x2, y2);
    c = coordonne(x3, y3);
    surface = 0;
    perimetre = 0;
}

triangle::triangle(triangle &Triangle)
{
    a = Triangle.a;
    b = Triangle.b;
    c = Triangle.c;
    surface = 0;
    perimetre = 0;
}

triangle triangle::operator=(triangle &Triangle)
{
    triangle triangleCrr(Triangle);
    return triangleCrr;
}

void triangle::affiche()
```



```
triangle triangle::operator=(triangle &Triangle)
{
    triangle triangleCrr(Triangle);
    return triangleCrr;
}

void triangle::affiche()
{
    std::cout << "les coordonne de a :" << std::endl;
    std::cout << "----------------------" << std::endl;
    a.affiche();
    forme::affiche();
    std::cout << "surface = " << surface << " perimetre = " << perimetre << std::endl;

    std::cout << "----------------------" << std::endl;

    std::cout << "les coordonne de b :" << std::endl;
    std::cout << "----------------------" << std::endl;
    b.affiche();
    forme::affiche();

    std::cout << "surface = " << surface << " perimetre = " << perimetre << std::endl;

    std::cout << "----------------------" << std::endl;

    std::cout << "les coordonne de c :" << std::endl;
    std::cout << "----------------------" << std::endl;
    c.affiche();
    forme::affiche();

    std::cout << "surface = " << surface << " perimetre = " << perimetre << std::endl;

    std::cout << "----------------------" << std::endl;
}

void triangle::deplace(int x, int y)
{
    a.deplace(x, y);
    b.deplace(x, y);
    c.deplace(x, y);
}

int main(int argc, char const *argv[])
{
    triangle T(10, 20, 30, 40, 50, 50, 11);
    T.affiche();
    getchar();
    T.deplace(5, 4);
    T.affiche();
    return 0;
}
```

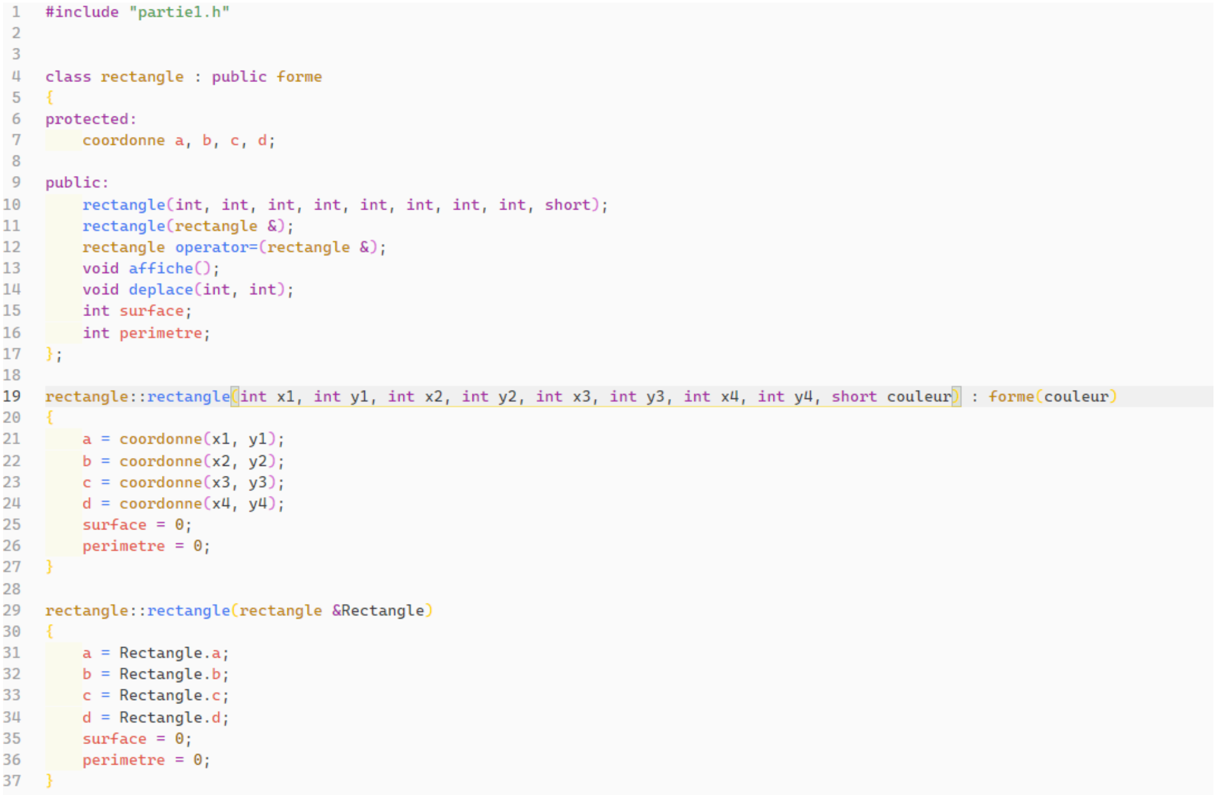
L’EXECUTION



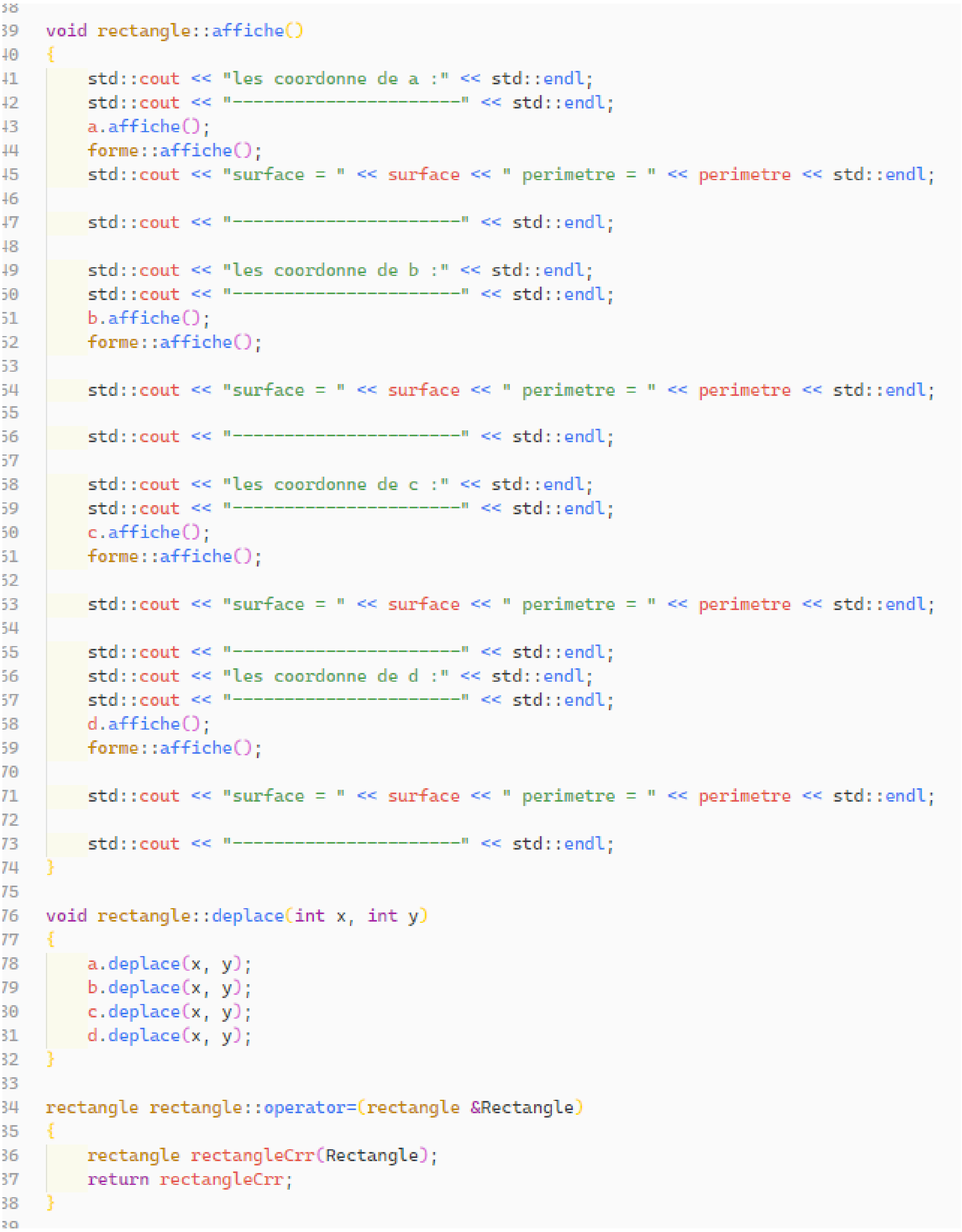
```
les coordonne de a :
----------------------
x= 10 y = 20
couleur = 11
surface = 0 perimetre = 0
----------------------
les coordonne de b :
----------------------
x= 30 y = 40
couleur = 11
surface = 0 perimetre = 0
----------------------
les coordonne de c :
----------------------
x= 50 y = 50
couleur = 11
surface = 0 perimetre = 0
----------------------
```

PARTIE 4

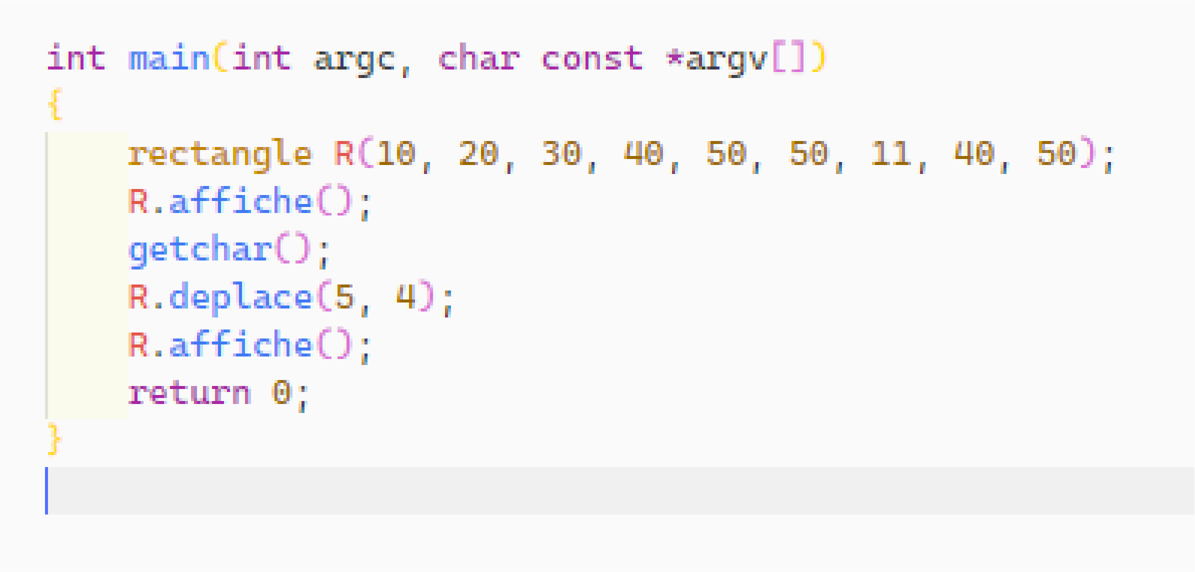
LE CODE



```cpp
#include "partie1.h"


class rectangle : public forme
{
protected:
    coordonne a, b, c, d;

public:
    rectangle(int, int, int, int, int, int, int, int, short);
    rectangle(rectangle &);
    rectangle operator=(rectangle &);
    void affiche();
    void deplace(int, int);
    int surface;
    int perimetre;
};

rectangle::rectangle(int x1, int y1, int x2, int y2, int x3, int y3, int x4, int y4, short couleur) : forme(couleur)
{
    a = coordonne(x1, y1);
    b = coordonne(x2, y2);
    c = coordonne(x3, y3);
    d = coordonne(x4, y4);
    surface = 0;
    perimetre = 0;
}

rectangle::rectangle(rectangle &Rectangle)
{
    a = Rectangle.a;
    b = Rectangle.b;
    c = Rectangle.c;
    d = Rectangle.d;
    surface = 0;
    perimetre = 0;
}
```

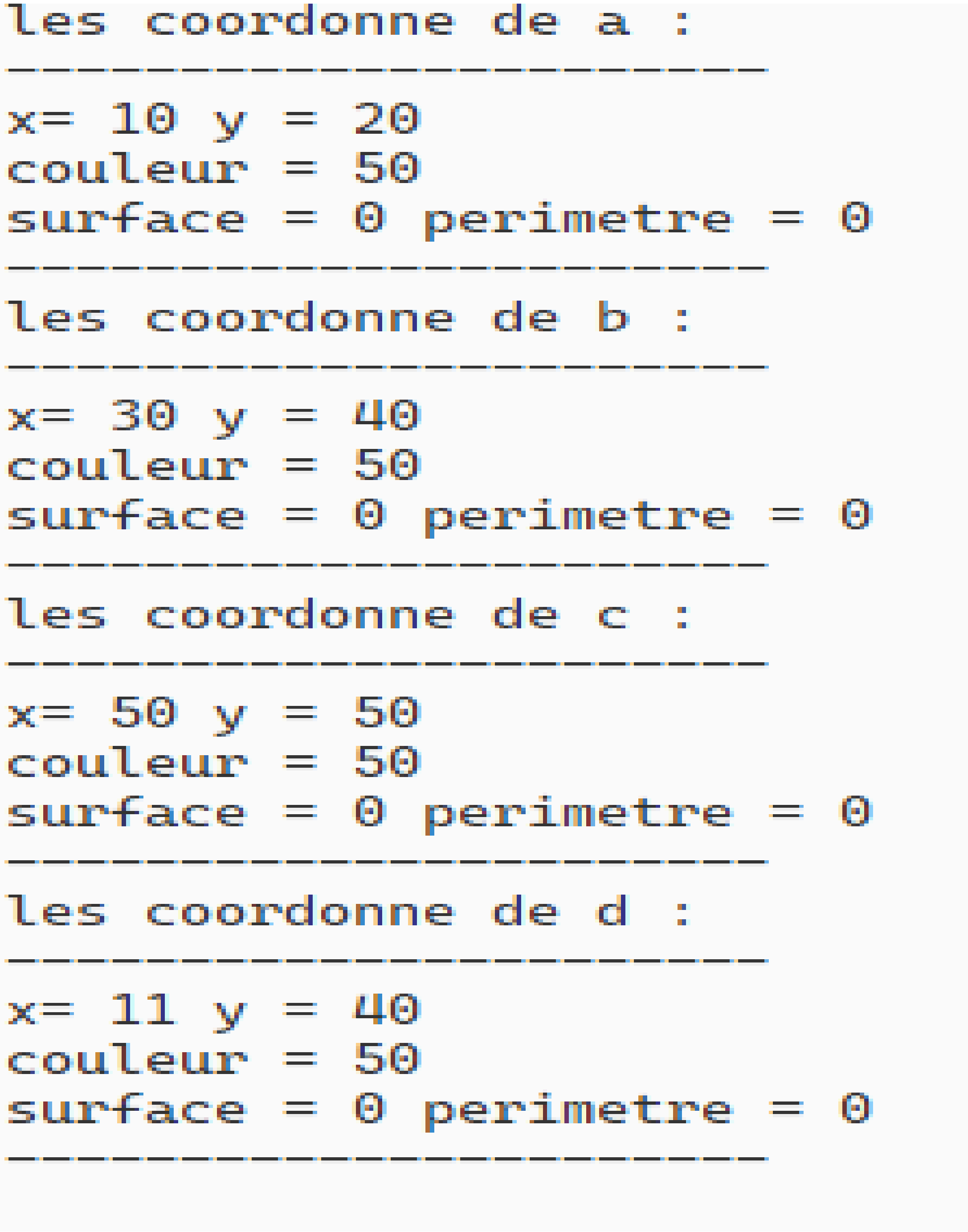


```cpp
void rectangle::affiche()
{
    std::cout << "les coordonne de a :" << std::endl;
    std::cout << "----------------------" << std::endl;
    a.affiche();
    forme::affiche();
    std::cout << "surface = " << surface << " perimetre = " << perimetre << std::endl;

    std::cout << "----------------------" << std::endl;

    std::cout << "les coordonne de b :" << std::endl;
    std::cout << "----------------------" << std::endl;
    b.affiche();
    forme::affiche();

    std::cout << "surface = " << surface << " perimetre = " << perimetre << std::endl;

    std::cout << "----------------------" << std::endl;

    std::cout << "les coordonne de c :" << std::endl;
    std::cout << "----------------------" << std::endl;
    c.affiche();
    forme::affiche();

    std::cout << "surface = " << surface << " perimetre = " << perimetre << std::endl;

    std::cout << "----------------------" << std::endl;
    std::cout << "les coordonne de d :" << std::endl;
    std::cout << "----------------------" << std::endl;
    d.affiche();
    forme::affiche();

    std::cout << "surface = " << surface << " perimetre = " << perimetre << std::endl;

    std::cout << "----------------------" << std::endl;
}

void rectangle::deplace(int x, int y)
{
    a.deplace(x, y);
    b.deplace(x, y);
    c.deplace(x, y);
    d.deplace(x, y);
}

rectangle rectangle::operator=(rectangle &Rectangle)
{
    rectangle rectangleCrr(Rectangle);
    return rectangleCrr;
}
```



```
int main(int argc, char const *argv[])
{
    rectangle R(10, 20, 30, 40, 50, 50, 11, 40, 50);
    R.affiche();
    getchar();
    R.deplace(5, 4);
    R.affiche();
    return 0;
}
```

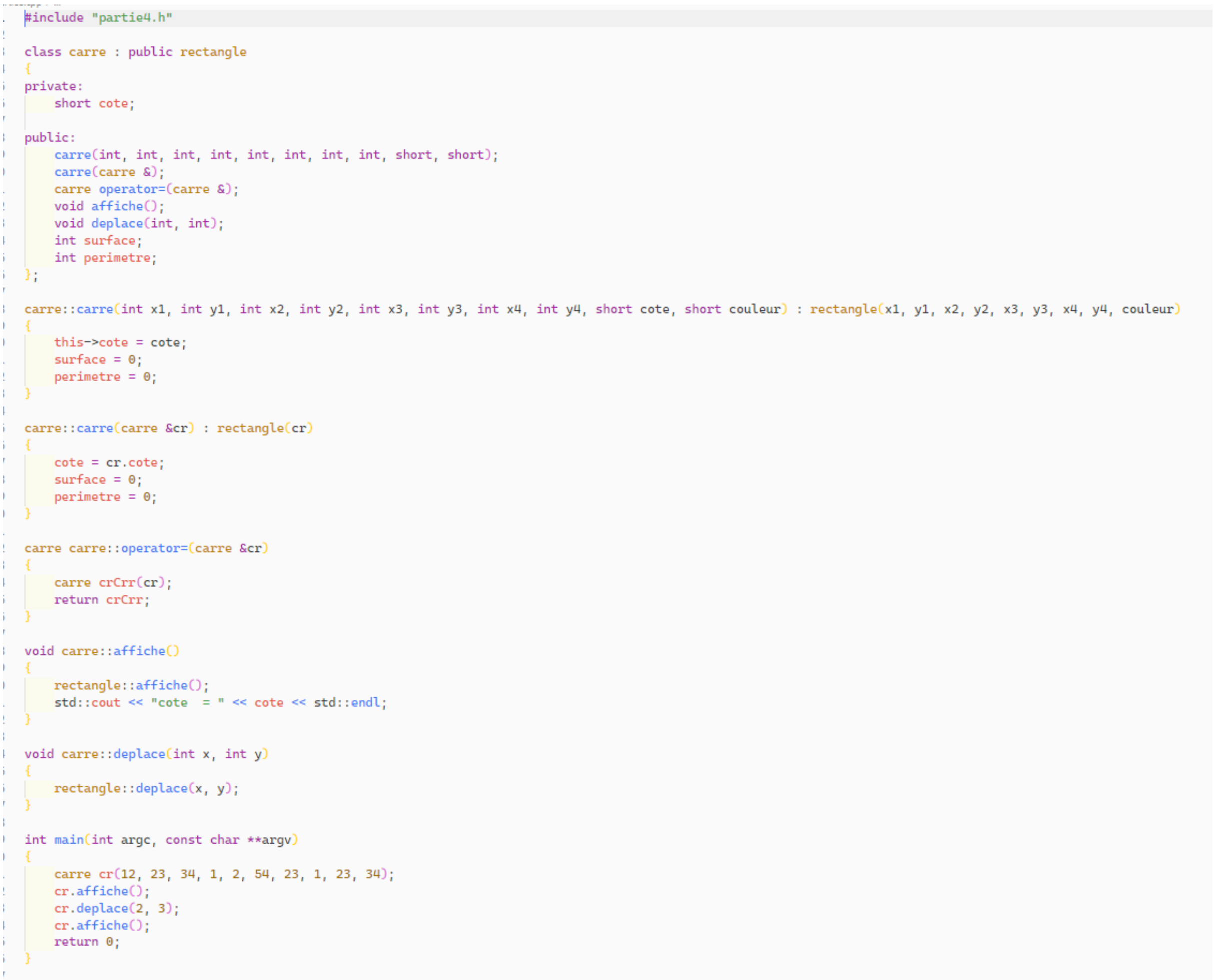
L'EXECUTION



```
les coordonne de a :
----------------------
x= 10 y = 20
couleur = 50
surface = 0 perimetre = 0
----------------------
les coordonne de b :
----------------------
x= 30 y = 40
couleur = 50
surface = 0 perimetre = 0
----------------------
les coordonne de c :
----------------------
x= 50 y = 50
couleur = 50
surface = 0 perimetre = 0
----------------------
les coordonne de d :
----------------------
x= 11 y = 40
couleur = 50
surface = 0 perimetre = 0
----------------------
```

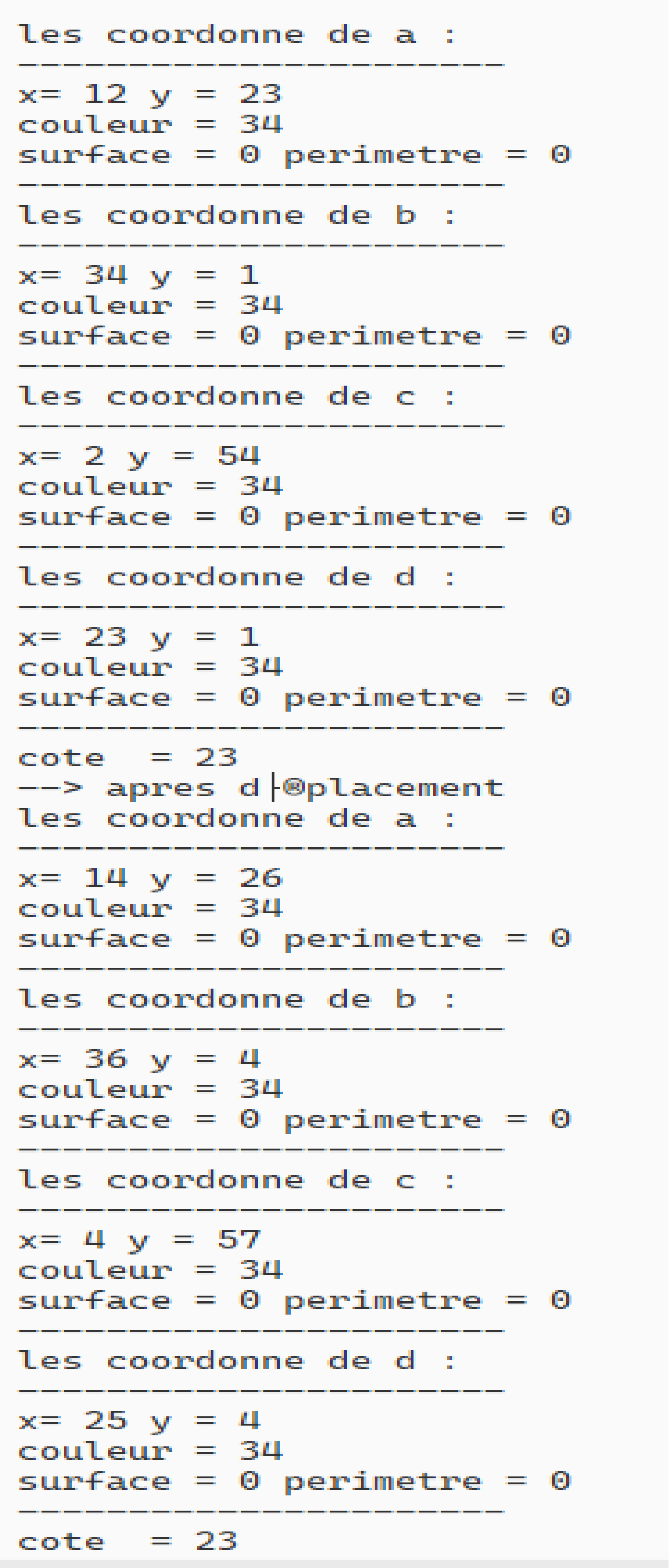
PARTIE 5

LE CODE



```cpp
#include "partie4.h"

class carre : public rectangle
{
private:
    short cote;

public:
    carre(int, int, int, int, int, int, int, int, short, short);
    carre(carre &);
    carre operator=(carre &);
    void affiche();
    void deplace(int, int);
    int surface;
    int perimetre;
};

carre::carre(int x1, int y1, int x2, int y2, int x3, int y3, int x4, int y4, short cote, short couleur) : rectangle(x1, y1, x2, y2, x3, y3, x4, y4, couleur)
{
    this->cote = cote;
    surface = 0;
    perimetre = 0;
}

carre::carre(carre &cr) : rectangle(cr)
{
    cote = cr.cote;
    surface = 0;
    perimetre = 0;
}

carre carre::operator=(carre &cr)
{
    carre crCrr(cr);
    return crCrr;
}

void carre::affiche()
{
    rectangle::affiche();
    std::cout << "cote  = " << cote << std::endl;
}

void carre::deplace(int x, int y)
{
    rectangle::deplace(x, y);
}

int main(int argc, const char **argv)
{
    carre cr(12, 23, 34, 1, 2, 54, 23, 1, 23, 34);
    cr.affiche();
    cr.deplace(2, 3);
    cr.affiche();
    return 0;
}
```

L'EXECUTION



```
les coordonne de a :
----------------------
x= 12 y = 23
couleur = 34
surface = 0 perimetre = 0
----------------------
les coordonne de b :
----------------------
x= 34 y = 1
couleur = 34
surface = 0 perimetre = 0
----------------------
les coordonne de c :
----------------------
x= 2 y = 54
couleur = 34
surface = 0 perimetre = 0
----------------------
les coordonne de d :
----------------------
x= 23 y = 1
couleur = 34
surface = 0 perimetre = 0
----------------------
cote  = 23
--> apres d├®placement
les coordonne de a :
----------------------
x= 14 y = 26
couleur = 34
surface = 0 perimetre = 0
----------------------
les coordonne de b :
----------------------
x= 36 y = 4
couleur = 34
surface = 0 perimetre = 0
----------------------
les coordonne de c :
----------------------
x= 4 y = 57
couleur = 34
surface = 0 perimetre = 0
----------------------
les coordonne de d :
----------------------
x= 25 y = 4
couleur = 34
surface = 0 perimetre = 0
----------------------
cote  = 23
```

FIN.