Đã bắt đầu vào lúc	Thứ hai, 25 Tháng chín 2023, 7:15 AM
Tình trạng	Đã hoàn thành
Hoàn thành vào lúc	Thứ năm, 28 Tháng chín 2023, 2:02 AM
Thời gian thực hiện	2 ngày 18 giờ
Điểm	11,00/11,00
Điểm	10,00 của 10,00 (100 %)

OOP: Attempt review

Câu hỏi 1

Chính xác

Điểm 1,00 của 1,00

In the coordinate plane, we have class Point to store a point with it's x-y coordinate.

Your task in this exercise is to implement functions marked with /* * STUDENT ANSWER */.

Note: For exercises in Week 1, we have #include <bits/stdc++.h> and using namespace std;

For example:

Test	Result
<pre>Point A(2, 3); cout << A.getX() << " " << A.getY();</pre>	2 3
<pre>Point A(2, 3); Point B(1, 1); cout << pow(A.distanceToPoint(B), 2);</pre>	5

Answer: (penalty regime: 0 %)

```
33
             this->x = x;
34
35
        void setY(double y)
36
37 ▼
38 ▼
39
              * STUDENT ANSWER
40
41
             this->y = y;
42
43
44
        double getX() const
```

```
/*
46 ▼
             * STUDENT ANSWER
47
48
49
            return this->x;
50
51
        double getY() const
52
53 ▼
54 ▼
            /*
55
             * STUDENT ANSWER
56
            return this->y;
57
58
59
        double distanceToPoint(const Point &pointA)
60
61 ▼
62 ▼
             * STUDENT ANSWER
63
64
             * TODO: calculate the distance from this point to point A in the coordin
65
            return sqrt(pow(this->x - pointA.x, 2) + pow(this->y - pointA.y, 2));
66
67
68
```

	Test	Expected	Got	
~	<pre>Point A(2, 3); cout << A.getX() << " " << A.getY();</pre>	2 3	2 3	~
~	<pre>Point A(2, 3); Point B(1, 1); cout << pow(A.distanceToPoint(B), 2);</pre>	5	5	~

1.

(Chính xác)

Chính xác

Điểm 1,00 của 1,00

In the coordinate plane, a circle is defined by center and radius.

Your task in this exercise is to implement functions marked with /* * STUDENT ANSWER */.

Note: you can use implemented class Point in previous question

For example:

Test	Result					
<pre>Circle A; A.printCircle();</pre>	Center:	{0.00,	0.00}	and	Radius	0.00

Answer: (penalty regime: 0 %)

```
void setCenter(Point point)
106
107 ▼
108 ▼
              * STUDENT ANSWER
109
110
             this->center.setX(point.getX());
111
             this->center.setY(point.getY());
112
113
114
         void setRadius(double radius)
115
116 ▼
117 ▼
              * STUDENT ANSWER
118
119
             this->radius = radius;
120
121
```

```
122
123
         Point getCenter() const
124 ▼
125 ▼
126
              * STUDENT ANSWER
127
128
             return this->center;
129
130
131
         double getRadius() const
132 ▼
133 ▼
134
              * STUDENT ANSWER
135
             return this->radius;
136
137
138
139
         void printCircle()
140 ▼
141
             printf("Center: {%.2f, %.2f} and Radius %.2f\n". this->center.getX(). th
142
```

	Test	Expected	Got	
~	<pre>Circle A; A.printCircle();</pre>		Center: {0.00, 0.00} and Radius 0.00	~

Chính xác

Chính xác

Điểm 1,00 của 1,00

In this exercise, you can use implemented functions in previous question (if needed) and implement these following functions.

```
bool containsPoint(const Point point){}
bool containsTriangle(const Point pointA, const Point pointB, const Point pointC){}
```

For example:

Test	Result
Point pointO(0, 2);	1
Point point1(1, 2);	
<pre>Circle A = Circle(point0, 2);</pre>	
<pre>cout << A.containsPoint(point1);</pre>	
Point pointO(0, 0);	0
Point point1(1, 0), point2(-1, 0), point3(0, 3);	
<pre>Circle A = Circle(point0, 3);</pre>	
<pre>cout << A.containsTriangle(point1, point2, point3);</pre>	

Answer: (penalty regime: 0 %)

```
Reset answer
```

```
51
52 double getY() const
53 ▼ {
```

```
* STUDENT ANSWER
55
56
            return this->y;
57
58
59
        double distanceToPoint(const Point &pointA)
60
61 ▼
            /*
62 ▼
             * STUDENT ANSWER
63
             * TODO: calculate the distance from this point to point A in the coordin
64
65
            return sqrt(pow(this->x - pointA.x, 2) + pow(this->y - pointA.y, 2));
66
67
68
69
    class Circle
70
71 ▼ {
72
    private:
73
        Point center;
        double radius;
74
75
76
    public:
77
        Circle()
78 ▼
79 ▼
80
             * STUDENT ANSWER
81
             * TODO: set zero center's x-y and radius
82
83
            center.setX(0);
            center.setY(∅);
84
            this->radius = 0;
85
86
87
```

02:10 28/09/2023 OOP: Attempt review

	Test	Expected	Got	
~	<pre>Point point0(0, 2); Point point1(1, 2); Circle A = Circle(point0, 2); cout << A.containsPoint(point1);</pre>	1	1	~
~	<pre>Point pointO(0, 0); Point point1(1, 0), point2(-1, 0), point3(0, 3); Circle A = Circle(point0, 3); cout << A.containsTriangle(point1, point2, point3);</pre>	0	0	~

Passed all tests! ✓

(Chính xác)

Chính xác

Điểm 1,00 của 1,00

In this exercise, you can use implemented functions in *previous question* (if needed) and implement these following functions.

- 1. Overload operator =
- 2. Overload operator == (The two circles are equal if they have the same center and radius)
- 3. Overload operator >> (stdin center.x, center.y, radius in order)

For example:

Test	Input	Result
<pre>Point pointO(0, 0); Circle A = Circle(pointO, 3); Circle B; B = A; cout << (B == A);</pre>		1
<pre>Circle A; cin >> A; A.printCircle();</pre>	2 3.5 2	Center: {2.00, 3.50} and Radius 2.00

Answer: (penalty regime: 0 %)

```
Reset answer
```

```
*/
32
33
            this->x = x;
34
35
36
        void setY(double y)
37 ▼
38 ▼
39
             * STUDENT ANSWER
40
            this->y = y;
41
42
43
44
        double getX() const
45 ▼
            /*
46 ▼
             * STUDENT ANSWER
47
48
            return this->x;
49
50
51
52
        double getY() const
53 ▼
54 ▼
55
             * STUDENT ANSWER
56
57
            return this->y;
58
59
60
        double distanceToPoint(const Point &pointA)
61 ▼
62 ▼
```

OOP: Attempt review

	Test	Input	Expected	Got	
~	<pre>Point pointO(0, 0); Circle A = Circle(pointO, 3); Circle B; B = A; cout << (B == A);</pre>		1	1	~
~	<pre>Circle A; cin >> A; A.printCircle();</pre>	2 3.5 2	Center: {2.00, 3.50} and Radius 2.00	Center: {2.00, 3.50} and Radius 2.00	~

Passed all tests! ✓

Chính xác

02:10 28/09/2023

Chính xác

Điểm 1,00 của 1,00

In a game, we have class Character to store characters' data.

The class Character is declared as below:

```
class Character {
protected:
    int hp;
    int x;
    int y;
public:
    // Constructor: set the values of x and y and hp to 0
    Character();
    // Constructor: set the values of hp, x and y to each parameter
    Character(int hp, int x, int y);
    // Set and get hp
    int getHp();
    void setHp(int hp);
    // Set and get x
    int getX();
    void setX(int x);
    // Set and get y
    int getY();
    void setY(int y);
    // Get Manhattan distance to other character
    int getManhattanDistTo(Character* other);
};
```

Your task is to define the constructors and the methods of the class.

Note:

In this task, iostream library has been included, and namespace std is being used. No other libraries are allowed.

For example:

Test	Result
Character ch1(100, 3, 6);	100 3 6
cout << ch1.getHp() << " " << ch1.getX() << " " << ch1.getY();	

Answer: (penalty regime: 0 %)

```
26
        this->hp = hp;
27
28
29
   int Character::getX()
30 ▼ {
31
        // STUDENT ANSWER
32
        return this->x;
33
34
35
    void Character::setX(int x)
36 ▼
37
        // STUDENT ANSWER
        this->x = x;
38
39
40
    int Character::getY()
41
42 ▼
43
        // STUDENT ANSWER
        return this->y;
44
45
46
   void Character::setY(int y)
```

	Test	Expected	Got	
~	<pre>Character ch1(100, 3, 6); cout << ch1.getHp() << " " << ch1.getX() << " " << ch1.getY();</pre>	100 3 6	100 3 6	~
~	<pre>Character ch2; cout << ch2.getHp() << " " << ch2.getX() << " " << ch2.getY();</pre>	000	000	~
~	<pre>Character* ch31 = new Character(100, 1, 2); Character* ch32 = new Character(100, -3, 4); cout << ch31->getManhattanDistTo(ch32); delete ch31; delete ch32;</pre>	6	6	~
~	<pre>Character ch4; ch4.setX(4); cout << ch4.getX();</pre>	4	4	~
~	<pre>Character ch5; ch5.setY(5); cout << ch5.getY();</pre>	5	5	~
~	<pre>Character ch6; ch6.setHp(6); cout << ch6.getHp();</pre>	6	6	~

Chính xác

Chính xác

Điểm 1,00 của 1,00

In a game, we have class Character to store characters' data.

The class Character is declared as below:

```
class Character {
protected:
    int hp;
    int x;
    int y;
public:
    Character();
    Character(int hp, int x, int y);
    int getHp();
    void setHp(int hp);
    int getX();
    void setX(int x);
    int getY();
    void setY(int y);
    int getManhattanDistTo(Character* other);
    // Operator =: copy all data from Character other
    void operator=(const Character& other);
    // Operator <: Character a < Character b when a's hp is less than or equal b's hp
    bool operator<(const Character& other);</pre>
    // Operator () with zero parameters: print data of the instance with format: hp-x-y
    void operator()();
};
```

Your task is to overload these following operators: =, < and (). Their functions are described above.

02:10 28/09/2023 OOP: Attempt review

Note:

In this task, iostream library has been included, and namespace std is being used. No other libraries are allowed.

For example:

Test	Result
Character ch1(100, 3, 6); ch1();	100-3-6

Answer: (penalty regime: 0 %)

```
2 ▼ {
        // STUDENT ANSWER
        Character tempt = other;
 4
        this->setHp(tempt.getHp());
        this->setX(tempt.getX());
 6
 7
        this->setY(tempt.getY());
 8
 9
    // Character a < Character b when a's hp is less than or equal b's hp
10
    bool Character::operator<(const Character &other)</pre>
11
12 ▼ {
13
        // STUDENT ANSWER
        Character tempt = other;
14
        return this->getHp() <= tempt.getHp();</pre>
15
16
17
    // Print data of the instance with format: hp-x-y
18
    void Character::operator() ()
19
20 ▼ {{
21
        // STUDENT ANSWER
        cout << this->getHp() << "-" << this->getX() << "-" << this->getY();
22
23
```

	Test	Expected	Got	
~	Character ch1(100, 3, 6); ch1();	100-3-6	100-3-6	~
~	Character ch21(10, 20, 30); Character ch22(5, 5, 6); cout << ((ch21 < ch22) ? "true" : "false");	false	false	~
~	Character ch31; Character ch32; cout << ((ch31 < ch32) ? "true" : "false");	true	true	~
~	<pre>Character ch4; ch4(); cout << "\n"; ch4 = Character(5, 10, 20); ch4();</pre>	0-0-0 5-10-20	0-0-0 5-10-20	~
~	Character(3, 4, 5)(); cout << ((Character(3, 4, 5) < Character(3, 4, 5)) ? "true" : "false");	3-4-5true	3-4-5true	~



Chính xác

Điểm 1,00 của 1,00

In a game, we have class Character to store characters' data.

The class Character is declared as below:

```
class Character {
private:
    int x;
    int y;
protected:
    int hp;
public:
    Character();
    Character(int hp, int x, int y);
    int getHp();
   void setHp(int hp);
    int getX();
    void setX(int x);
    int getY();
    void setY(int y);
    int getManhattanDistTo(Character* other);
   void operator()();
};
```

Your task is to define a new class Player which is a derived class of class Character. The requirements of the new class are listed below:

- Methods of base class Character cannot be accessed outside Player class using Player instances **Example**: Player pl; pl.setX(); will raise errors when compiled.
- Player class has these methods and constructors:
 - Constructor Player(): acts just like Character()
 - Constructor Player(int hp, int x, int y): acts just like Character(hp, x, y)
 - Method void printPlayerData(): prints data of the instance with format: hp-x-y
 - Method void moveTo(int x, int y): sets the values of x, y to new values

• The mentioned constructors and methods can be accessed outside Player class.

Note:

In this task, iostream library has been included, and namespace std is being used. No other libraries are allowed.

For example:

Test	Result
<pre>Player pl1(100, 3, 6); pl1.printPlayerData();</pre>	100-3-6

Answer: (penalty regime: 0 %)

```
Player()
 6
7 🔻
 8
            hp = 0;
 9
            x = 0;
10
            V = 0;
11
12
        Player(int hp, int x, int y)
13 ▼
            this->hp = hp;
14
15
            this->x = x;
            this->y = y;
16
17
        void printPlayerData()
18
19 ▼
            cout << this->hp << "-" << this->x << "-" << this->y;
20
21
22
        void moveTo(int x, int y)
23 ▼
            this->x = x;
24
25
            this->y = y;
26
27
```

	Test	Expected	Got	
~	Player pl1(100, 3, 6); pl1.printPlayerData();	100-3-6	100- 3-6	~
~	Player pl2; pl2.printPlayerData();	0-0-0	0-0-0	~
~	Player pl3(300, 1, 2); pl3.moveTo(3, 4); pl3.printPlayerData();	300-3-4	300- 3-4	~
~	<pre>Player pl4(300, 1, 2); const bool condition = (is_unambiguous_public_base_of<character>(&pl4) == nullptr && is_base_of<character, player="">::value == true); assert(condition);</character,></character></pre>			~
~	Player pl5(300, 1, 2); pl5.moveTo(9, 7); pl5.printPlayerData();	300-9-7	300- 9-7	•



Chính xác

Điểm 1,00 của 1,00

Hoang is a K19 student studying at Bach Khoa University. He plans to write a book management software for the library. In the class design, Hoang has designed the class Book as follows:

```
class Book
{
private:
    char* title;
    char* authors;
    int publishingYear;
public:
    // some method
}
```

Your task in this exercise is to implement functions marked with /* * STUDENT ANSWER */.

Note: For exercises in Week 2, we have #include <bits/stdc++.h> and using namespace std;

For example:

Test	Result
<pre>Book book1("Giai tich 1","Nguyen Dinh Huy",2000); book1.printBook();</pre>	Giai tich 1 Nguyen Dinh Huy 2000
<pre>Book book1("Giai tich 1","Nguyen Dinh Huy",2000); Book book2 = book1; book2.printBook();</pre>	Giai tich 1 Nguyen Dinh Huy 2000

Answer: (penalty regime: 0 %)

```
void setTitle(const char *title)
41
42 ▼
43 ▼
44
              * STUDENT ANSWER
45
            char* t=(char*) title;
46
47
            this->title = t;
48
49
        void setAuthors(const char *authors)
50
51 ▼
52 ▼
53
             * STUDENT ANSWER
54
            char* a = (char*) authors;
55
            this->authors = a;
56
57
58
        void setPublishingYear(int publishingYear)
59
60 ▼
61 ▼
             * STUDENT ANSWER
62
63
            this->publishingYear = publishingYear;
64
65
66
        char *getTitle() const
67
68 ▼
69 ▼
             * STUDENT ANSWER
70
71
72
            return this->title;
73
74
75
        char *getAuthors() const
76 ▼
77 ▼
78
              * STUDENT ANSWER
79
```

	Test	Expected	Got	
~	<pre>Book book1("Giai tich 1","Nguyen Dinh Huy",2000); book1.printBook();</pre>	Giai tich 1 Nguyen Dinh Huy 2000	Giai tich 1 Nguyen Dinh Huy 2000	~
~	<pre>Book book1("Giai tich 1","Nguyen Dinh Huy",2000); Book book2 = book1; book2.printBook();</pre>	Giai tich 1 Nguyen Dinh Huy 2000	Giai tich 1 Nguyen Dinh Huy 2000	~

Chính xác

Chính xác

Điểm 1,00 của 1,00

In this exercise, you can use implemented functions in *previous question* (if needed) and implement these following functions.

```
friend bool checkAuthor(Book book, char* author){}
```

In the authors attribute, it is possible to have more than one author writing a book together. So authors will have the following format: "author1, author2, ..., authorN"

The function returns true if the author is on the book's authors list, otherwise it returns false

Note: Both first and last name must match. If only a partial match, the function still returns false

For example:

Test	Result
Book book1("Giai tich 1", "Nguyen Dinh Huy, Nguyen Thi Xuan Anh", 2000); cout << checkAuthor(book1, "Nguyen Dinh Huy");	1
Book book1("Giai tich 1", "Nguyen Dinh Huy, Nguyen Thi Xuan Anh", 2000); cout << checkAuthor(book1, "Nguyen Thi Xuan");	0

Answer: (penalty regime: 0 %)

```
char *t = (char *)title;
this->title = t;

void setAuthors(const char *authors)

{
    /*
    * STUDENT ANSWER
```

OOP: Attempt review

```
02:10 28/09/2023
```

```
54
55
            char *a = (char *)authors;
            this->authors = a;
56
57
58
        void setPublishingYear(int publishingYear)
59
60 ▼
61 ▼
             * STUDENT ANSWER
62
63
            this->publishingYear = publishingYear;
64
65
66
        char *getTitle() const
67
68 ▼
69 ▼
70
             * STUDENT ANSWER
71
72
            return this->title;
73
74
75
        char *getAuthors() const
76 ▼
77 ▼
78
             * STUDENT ANSWER
79
80
            return this->authors;
81
82
```

	Test	Expected	Got	
~	Book book1("Giai tich 1", "Nguyen Dinh Huy, Nguyen Thi Xuan Anh", 2000); cout << checkAuthor(book1, "Nguyen Dinh Huy");	1	1	~
~	Book book1("Giai tich 1", "Nguyen Dinh Huy, Nguyen Thi Xuan Anh", 2000); cout << checkAuthor(book1, "Nguyen Thi Xuan");	0	0	~

02:10 28/09/2023 OOP: Attempt review

Passed all tests! ✓



Chính xác

Điểm 1,00 của 1,00

In this exercise, you will implement function **printBook(const Book book)** in **class Printer** to print information of the book. See example for output format (no spaces at the end of each line and no empty lines at the end).

Note: In the authors attribute, it is possible to have more than one author writing a book together. So authors will have the following format: "author1, author2, ..., authorN"

For example:

Test	Result
Book book1("Giai tich 1", "Nguyen Dinh Huy, Nguyen Thi Xuan Anh", 2000); Printer::printBook(book1);	Giai tich 1 Nguyen Dinh Huy Nguyen Thi Xuan Anh 2000
Book book1("Introduction to Algorithms", "Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein", 1990); Printer::printBook(book1);	Introduction to Algorithms Thomas H. Cormen Charles E. Leiserson Ronald L. Rivest Clifford Stein 1990

Answer: (penalty regime: 0 %)

```
1 class Book
2 v {
3 private:
```

```
4
        char *title;
        char *authors;
 5
        int publishingYear;
 6
 7
    public:
 8
 9
        Book()
10 ▼
11 ▼
12
             * STUDENT ANSWER
             * TODO: set zero publishingYear and null pointer
13
14
15
            title = nullptr;
            authors = nullptr;
16
17
            publishingYear = 0;
18
19
20
        Book(const char *title, const char *authors, int publishingYear)
21 •
22 ▼
             /*
23
             * STUDENT ANSWER
24
25
            this->setTitle(title);
            this->setAuthors(authors);
26
27
            this->setPublishingYear(publishingYear);
28
29
30
        Book(const Book &book)
31 ▼
32 ▼
33
              * STUDENT ANSWER
34
             * TODO: deep copy constructor
35
36
            this->setTitle(book.getTitle()):
37
```

02:10 28/09/2023 OOP: Attempt review

	Test	Expected	Got	
~	Book book1("Giai tich 1", "Nguyen Dinh Huy, Nguyen Thi Xuan Anh", 2000); Printer::printBook(book1);	Giai tich 1 Nguyen Dinh Huy Nguyen Thi Xuan Anh 2000	Giai tich 1 Nguyen Dinh Huy Nguyen Thi Xuan Anh 2000	~
~	Book book1("Introduction to Algorithms", "Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein", 1990); Printer::printBook(book1);	Introduction to Algorithms Thomas H. Cormen Charles E. Leiserson Ronald L. Rivest Clifford Stein 1990	Introduction to Algorithms Thomas H. Cormen Charles E. Leiserson Ronald L. Rivest Clifford Stein	~

Passed all tests! ✓

Chính xác

Chính xác

Điểm 1,00 của 1,00

- 1. In the toy store, all toy has a price. Car toy has a price and color, Puzzle toy has a price and size. We have to implement class CarToy and class PuzzleToy which inherit from class Toy.
- 2. class ToyBox has a pointer array to store a list of toys (up to 5 items including car and puzzle) and number of items in the box.

Your task is to implement two function addltem(...) in class ToyBox. If successfully added, the function returns the current number of toys in the box. If the box is full, return -1.

For example:

Test	Result
<pre>CarToy car(20000,red); PuzzleToy puzzle(30000,small); car.printType(); puzzle.printType();</pre>	This is a car toy This is a puzzle toy
<pre>CarToy car(20000,red); PuzzleToy puzzle(30000,small); ToyBox box; box.addItem(car); box.addItem(puzzle); box.printBox();</pre>	This is a car toy This is a puzzle toy
<pre>Toy* toy = new CarToy(30000,red); toy->printType();</pre>	This is a car toy

Answer: (penalty regime: 0 %)

```
9/ 1
             for (int i = 0; i < numberOfItems; ++i)</pre>
 98
 99 🔻
100
                  delete toyBox[i];
101
102
103
104
         int addItem(const CarToy &carToy)
105 ▼
106 ▼
107
              * STUDENT ANSWER
              * TODO: function add a new Car toy to the box.
108
                       If successfully added, the function returns the current number
109
                       If the box is full, return -1.
110
              */
111
             if (numberOfItems + 1 > 5)
112
113
                 return -1;
114
             else
115 ▼
                  toyBox[numberOfItems] = new CarToy(carToy);
116
                 ++numberOfItems;
117
118
                 return numberOfItems;
119
120
         }
121
         int addItem(const PuzzleToy &puzzleToy)
122
123 ▼
124 ▼
125
              * STUDENT ANSWER
126
              * TODO: function add a new Puzzle toy to the box.
                       If successfully added, the function returns the current number
127
128
                       If the box is full, return -1.
129
              */
             if (numberOfItems + 1 > 5)
130
                  return -1;
131
132
             else
133 ▼
                  toyBox[numberOfItems] = new PuzzleToy(puzzleToy);
134
                 ++numberOfItems;
135
                  return numberOfItems:
136
```

	Test	Expected	Got	
~	<pre>CarToy car(20000,red); PuzzleToy puzzle(30000,small); car.printType(); puzzle.printType();</pre>	This is a car toy This is a puzzle toy	This is a car toy This is a puzzle toy	~
~	<pre>CarToy car(20000,red); PuzzleToy puzzle(30000,small); ToyBox box; box.addItem(car); box.addItem(puzzle); box.printBox();</pre>	This is a car toy This is a puzzle toy	This is a car toy This is a puzzle toy	*
~	<pre>Toy* toy = new CarToy(30000,red); toy->printType();</pre>	This is a car toy	This is a car toy	~

Chính xác

02:10 28/09/2023 OOP: Attempt review

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