HW02

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< Shape.h >

```cpp
#ifndef SHAPE_H
#define SHAPE_H

class Shape {
        Shape* next;

protected:
        virtual void draw() = 0;

public:
        Shape();
        virtual ~Shape();
        Shape* add(Shape* p);
        void paint();
        Shape* getNext();
};

#endif
```

< Shape.cpp >

```cpp
#include "Shape.h"
#include <iostream>
using namespace std;

Shape::Shape() {
        next = NULL;
}
Shape::~Shape() {}
Shape* Shape::add(Shape* p) {
        this->next = p;
        return p;
}
void Shape::paint() {
```

```cpp
        draw();
}
Shape* Shape::getNext() {
        return next;
}
```

< UI.h >
```cpp
#ifndef UI_H
#define UI_H
#include <string>

class UI {
public:
        static int menu00();
        static int menu01();
        static int menu02();
};

#endif
```

< UI..cpp >
```cpp
#include "UI.h"
#include <iostream>
using namespace std;

int UI::menu00() {
        int key;
        cout << "삽입:1, 삭제:2, 모두보기:3, 종료:4 >>";
        cin >> key;
        return key;
}

int UI::menu01() {
        int key;
        cout << "선:1, 원:2, 사각형:3 >>";
        cin >> key;
        return key;
}
```

```cpp
int UI::menu02() {
        int key;
        cout << "삭제하고자 하는 도형의 인덱스 >>";
        cin >> key;
        return key;
}
```

< GraphicEditor.h >
```cpp
#ifndef GRAPHIC_EDITOR_H
#define GRAPHIC_EDITOR_H
#include "Shape.h"

class GraphicEditor {
        Shape* pStart;
        Shape* pLast;

public:
        GraphicEditor();
        void insertItem(int type);
        void deleteItem(int index);
        void show();
        void run();
};

#endif
```

< GraphicEditor.cpp >
```cpp
#include "GraphicEditor.h"
#include "Line.h"
#include "Circle.h"
#include "Rect.h"
#include "UI.h"
#include <iostream>
using namespace std;

GraphicEditor::GraphicEditor() {
        pStart = pLast = NULL;
}
```

```cpp
void GraphicEditor::insertItem(int type) {
        Shape* p = NULL;
        switch (type) {
        case 1:
                p = new Line();
                break;
        case 2:
                p = new Circle();
                break;
        case 3:
                p = new Rect();
                break;
        default:
                break;
        }
        if (pStart == NULL) {
                pStart = p;
                pLast = p;
                return;
        }
        pLast->add(p);
        pLast = pLast->getNext();
}

void GraphicEditor::deleteItem(int index) {
        Shape* pre = pStart;
        Shape* tmp = pStart;
        if (pStart == NULL) {
                cout << "도형이 없습니다!" << endl;
                return;
        }
        for (int i = 0; i < index; i++) {
                pre = tmp;
                tmp = tmp->getNext();
        }
        if (tmp == pStart) {
                pStart = tmp->getNext();
                delete tmp;
        }
        else {
                pre->add(tmp->getNext());
```

```cpp
                delete tmp;
        }
}

void GraphicEditor::show() {
        Shape* tmp = pStart;
        int i = 0;
        while (tmp != NULL) {
                cout << i++ << ": ";
                tmp->paint();
                tmp = tmp->getNext();
        }
}

void GraphicEditor::run() {
        cout << "그래픽 에디터입니다." << endl;
        int menu, index, type;
        while (true) {
                menu = UI::menu00();
                switch (menu) {
                case 1:
                        type = UI::menu01();
                        insertItem(type);
                        break;
                case 2:
                        index = UI::menu02();
                        deleteItem(index);
                        break;
                case 3:
                        show();
                        break;
                default:
                        return;
                }
        }
}
```

< Circle.h >
```cpp
#ifndef CIRCLE_H
#define CIRCLE_H
```

```cpp
#include "Shape.h"

class Circle : public Shape {
protected:
        virtual void draw();
};

#endif
```

< Circle.cpp >
```cpp
#include "Circle.h"
#include "Shape.h"
#include <iostream>
using namespace std;

void Circle::draw() {
        cout << "Circle" << endl;
}
```

< Line.h >
```cpp
#ifndef LINE_H
#define LINE_H
#include "Shape.h"

class Line : public Shape {
protected:
        virtual void draw() ;
};

#endif
```

< Line.cpp >
```cpp
#include "Line.h"
#include "Shape.h"

#include <iostream>
using namespace std;
```

```cpp
void Line::draw() {
        cout << "Line" << endl;
}
```

< Rect.h >

```cpp
#ifndef RECT_H
#define RECT_H

#include "Shape.h"

class Rect : public Shape {
protected:
        virtual void draw() ;
};

#endif
```

< Rect.cpp >
```cpp
#include "Rect.h"
#include "Shape.h"
#include <iostream>
using namespace std;

void Rect::draw() {
        cout << "Rectangle" << endl;
}
```

< Main.cpp >
```cpp
#include "GraphicEditor.h"
#include "Circle.h"
#include "Line.h"
#include "Rect.h"
#include "Shape.h"
#include "UI.h"
#include <iostream>
```

```cpp
using namespace std;

int main() {
    GraphicEditor graphicEditor;
    graphicEditor.run();
}
```

< 실행 결과 >