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Tugas sistem embedded compailer

<https://github.com/ferryamludn2/Tugas-Kuliah-semester-5.git>

1. Encapsulation

```
1 #include "shape.h" /* Shape class interface */
2 #include <stdio.h> /* for printf() */
3 int main() {
4     Shape s1, s2; /* multiple instances of Shape */
5     Shape_ctor(&s1, 0, 1);
6     Shape_ctor(&s2, -1, 2);
7     printf("Shape s1(x=%d,y=%d)\n", Shape_getX(&s1), Shape_getY(&s1));
8     printf("Shape s2(x=%d,y=%d)\n", Shape_getX(&s2), Shape_getY(&s2));
9     Shape_moveBy(&s1, 2, -4);
10    Shape_moveBy(&s2, 1, -2);
11    printf("Shape s1(x=%d,y=%d)\n", Shape_getX(&s1), Shape_getY(&s1));
12    printf("Shape s2(x=%d,y=%d)\n", Shape_getX(&s2), Shape_getY(&s2));
13    return 0;
14 }
```

Setelah itu kita akan menuliskan pada terminal vs code: `gcc main.c shape.c -o oop_in_c.exe`

Ketika kita sudah menuliskan dan menjalankan kode di atas pada terminal maka akan membuka hasil dari percobaan dan untuk menampilkan hasilnya dilakukan pembukaan file .exe yang ada pada folder. Setelah itu mengetikkan `windows+r` dan ketik `cmd`. Pastikan sudah berada pada lokasi file yang diinginkan (`pwd`)

Hasil output:

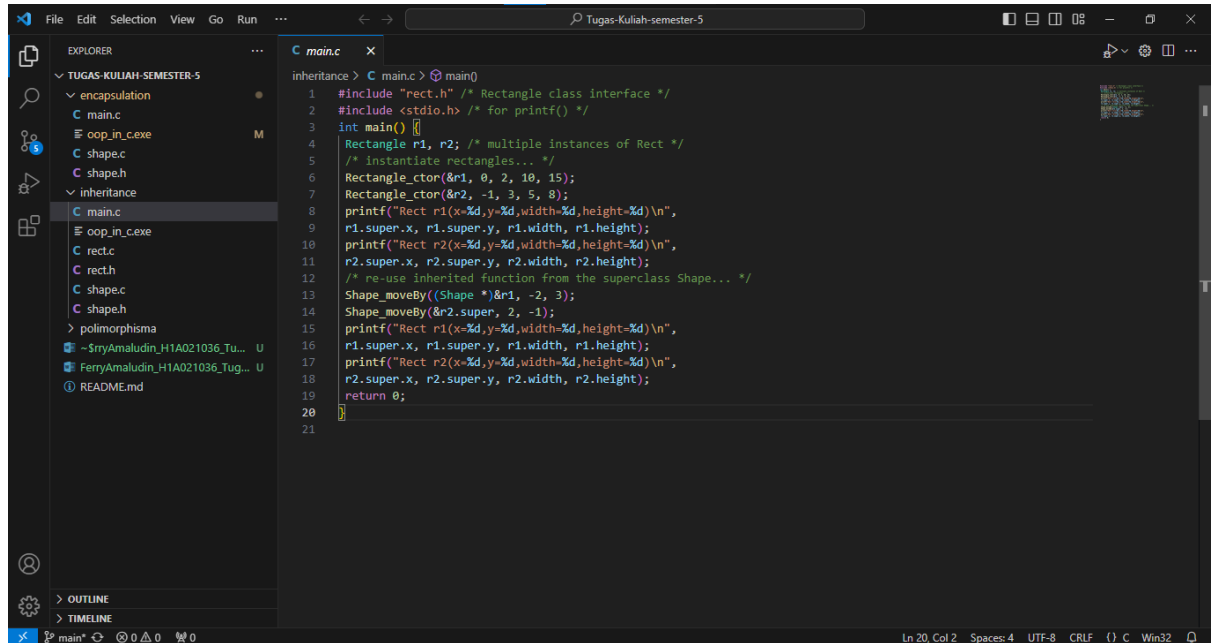
```
C:\Windows\system32\cmd.exe
sh Microsoft Windows [Version 10.0.19045.3570]
sh(c) Microsoft Corporation. All rights reserved.

C:\Users\Ferry Amaludin>cd C:\Users\Ferry Amaludin\OneDrive\Documents\Tugas-Kuliah-semester-5\encapsulation
C:\Users\Ferry Amaludin\OneDrive\Documents\Tugas-Kuliah-semester-5\encapsulation>gcc main.c shape.c -o oop_in_c.exe
Shape s1(x=0,y=1)
Shape s2(x=-1,y=2)
Shape s1(x=2,y=-3)
Shape s2(x=0,y=0)

C:\Users\Ferry Amaludin\OneDrive\Documents\Tugas-Kuliah-semester-5\encapsulation>
```

Ketika sudah dibuka file exe akan terupdate Riwayat telah dibukanya

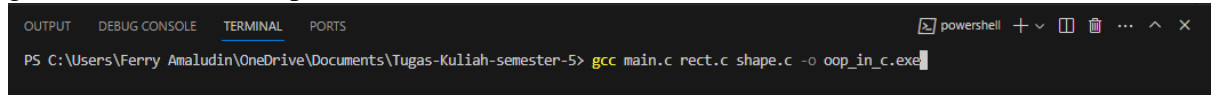
2. Inheritance



```
1 #include "rect.h" /* Rectangle class interface */
2 #include <stdio.h> /* for printf() */
3 int main() {
4     Rectangle r1, r2; /* multiple instances of Rect */
5     /* instantiate rectangles... */
6     Rectangle_ctor(&r1, 0, 2, 10, 15);
7     Rectangle_ctor(&r2, -1, 3, 5, 8);
8     printf("Rect r1(x=%d,y=%d,width=%d,height=%d)\n",
9           r1.super.x, r1.super.y, r1.width, r1.height);
10    printf("Rect r2(x=%d,y=%d,width=%d,height=%d)\n",
11          r2.super.x, r2.super.y, r2.width, r2.height);
12    /* re-use inherited function from the superclass Shape... */
13    Shape_moveBy((Shape *)&r1, -2, 3);
14    Shape_moveBy(&r2, 2, -1);
15    printf("Rect r1(x=%d,y=%d,width=%d,height=%d)\n",
16          r1.super.x, r1.super.y, r1.width, r1.height);
17    printf("Rect r2(x=%d,y=%d,width=%d,height=%d)\n",
18          r2.super.x, r2.super.y, r2.width, r2.height);
19    return 0;
20 }
```

Kemudian mengetikkan pada terminal

`gcc [namafilename.c] -o oop_in_c.exe`

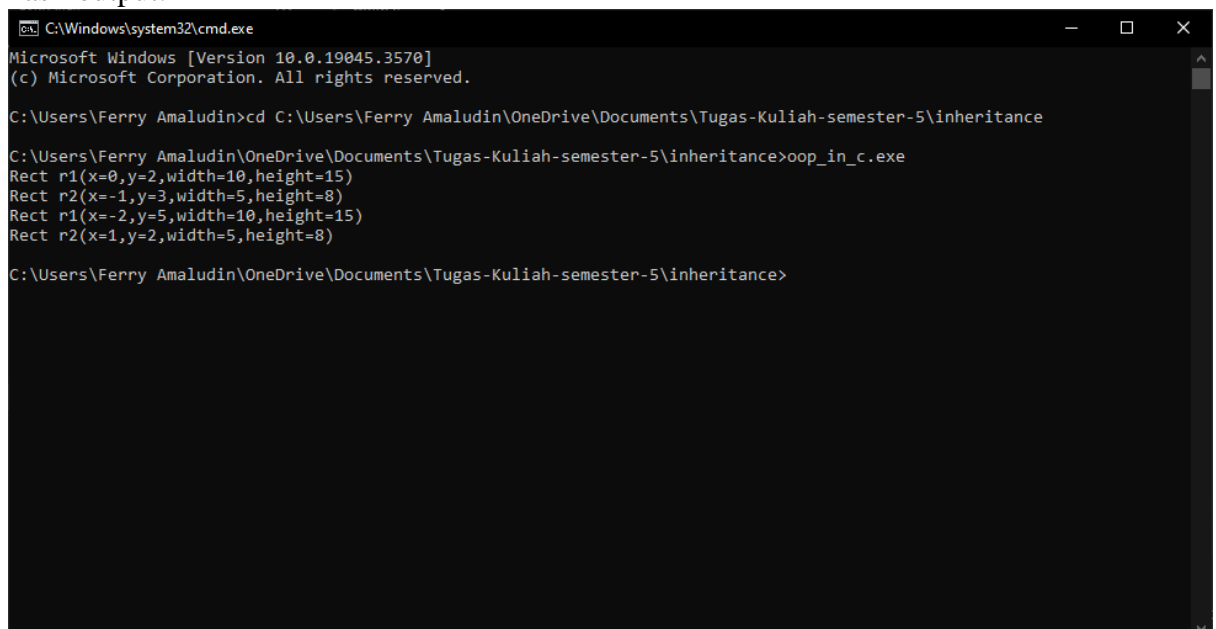


```
PS C:\Users\Ferry Amaludin\OneDrive\Documents\Tugas-Kuliah-semester-5> gcc main.c rect.c shape.c -o oop_in_c.exe
```

Setelah itu mengarahkan ke file directory file yang diinginkan

`cd C:\Users\Ferry Amaludin\OneDrive\Documents\Tugas-Kuliah-semester-5\inheritance`

hasil output:



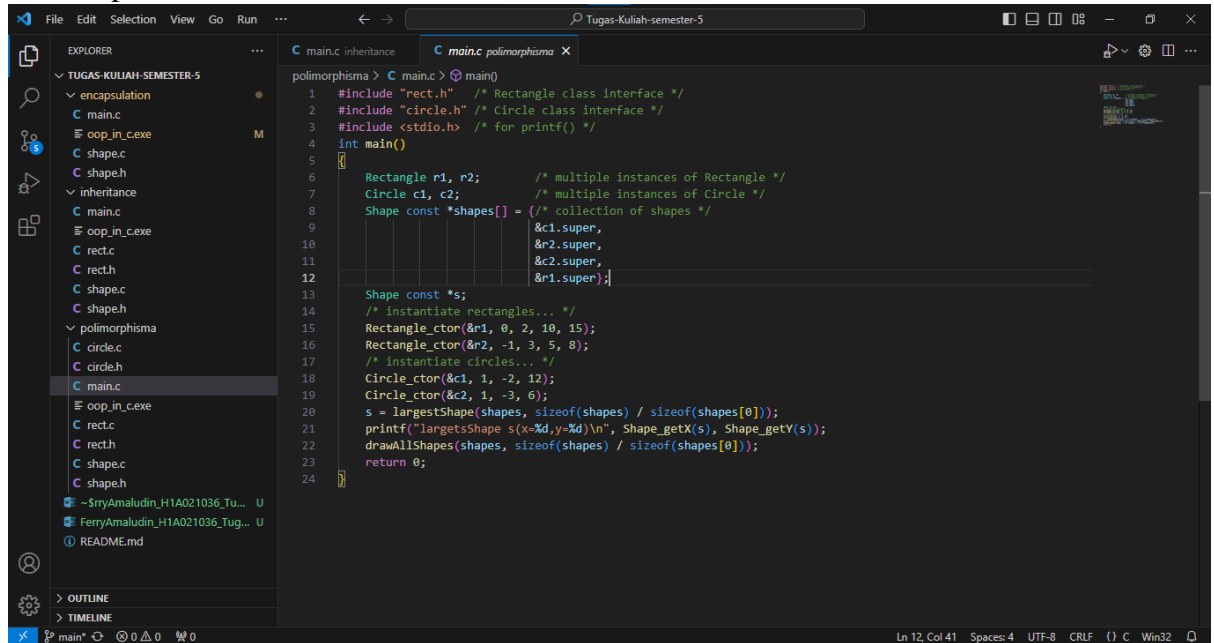
```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.19045.3570]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Ferry Amaludin>cd C:\Users\Ferry Amaludin\OneDrive\Documents\Tugas-Kuliah-semester-5\inheritance

C:\Users\Ferry Amaludin\OneDrive\Documents\Tugas-Kuliah-semester-5\inheritance>oop_in_c.exe
Rect r1(x=0,y=2,width=10,height=15)
Rect r2(x=-1,y=3,width=5,height=8)
Rect r1(x=-2,y=5,width=10,height=15)
Rect r2(x=1,y=2,width=5,height=8)

C:\Users\Ferry Amaludin\OneDrive\Documents\Tugas-Kuliah-semester-5\inheritance>
```

3. Polimorfisma

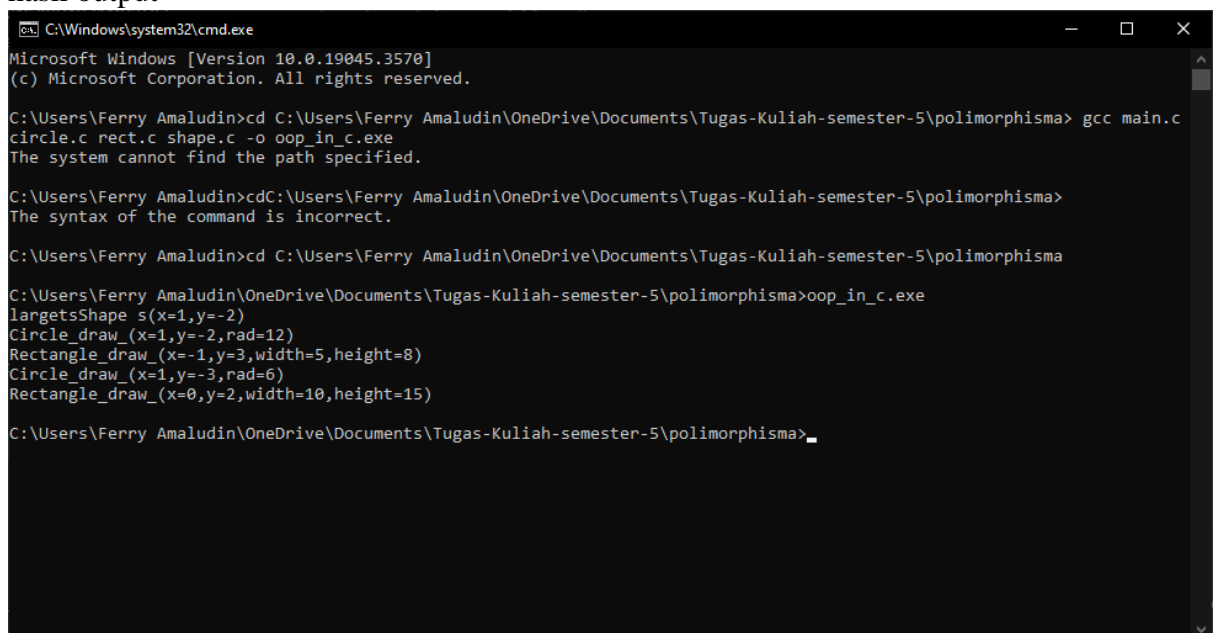


```
1 #include "rect.h" /* Rectangle class interface */
2 #include "circle.h" /* Circle class interface */
3 #include <stdio.h> /* for printf() */
4 int main()
5 {
6     Rectangle r1, r2; /* multiple instances of Rectangle */
7     Circle c1, c2; /* multiple instances of Circle */
8     Shape const *shapes[] = { /* collection of shapes */
9         &c1.super,
10        &r2.super,
11        &c2.super,
12        &r1.super};
13
14     Shape const *s;
15     /* instantiate rectangles... */
16     Rectangle_ctor(&r1, 0, 2, 10, 15);
17     Rectangle_ctor(&r2, -1, 3, 5, 8);
18     /* instantiate circles... */
19     Circle_ctor(&c1, 1, -2, 12);
20     Circle_ctor(&c2, 1, -3, 6);
21     s = largestShape(shapes, sizeof(shapes) / sizeof(shapes[0]));
22     printf("largestShape s(x=%d,y=%d)\n", Shape_getX(s), Shape_getY(s));
23     drawAllShapes(shapes, sizeof(shapes) / sizeof(shapes[0]));
24     return 0;
25 }
```

gcc [namafile.c] -o oop_in_c.exe

gcc main.c circle.c rect.c shape.c -o oop_in_c.exe

hasil output



```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 10.0.19045.3570]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Ferry Amaludin>cd C:\Users\Ferry Amaludin\OneDrive\Documents\Tugas-Kuliah-semester-5\polimorfisma> gcc main.c
circle.c rect.c shape.c -o oop_in_c.exe
The system cannot find the path specified.

C:\Users\Ferry Amaludin>cd C:\Users\Ferry Amaludin\OneDrive\Documents\Tugas-Kuliah-semester-5\polimorfisma>
The syntax of the command is incorrect.

C:\Users\Ferry Amaludin>cd C:\Users\Ferry Amaludin\OneDrive\Documents\Tugas-Kuliah-semester-5\polimorfisma>
C:\Users\Ferry Amaludin\OneDrive\Documents\Tugas-Kuliah-semester-5\polimorfisma> oop_in_c.exe
largestShape s(x=1,y=-2)
Circle_draw_(x=1,y=-2,rad=12)
Rectangle_draw_(x=-1,y=3,width=5,height=8)
Circle_draw_(x=1,y=-3,rad=6)
Rectangle_draw_(x=0,y=2,width=10,height=15)

C:\Users\Ferry Amaludin\OneDrive\Documents\Tugas-Kuliah-semester-5\polimorfisma>
```