Lab_11 Virtual functions, RTTI.

- Create an abstract class Figure that contains the area s of the plane figure, the abstract function area() and the virtual function disp() to display the area s.
- Create the derived classes Circle (data r), Triangle (data a, h) and Rectangle (data a, b), prepare the implementation of the virtual function area () for each derived class (a calculation of the area s of the plane figure), and also override virtual function disp(), which should display the name of the figure (\"Circle\", \"Triangle\", \"Rectangle\") and call the base class disp() function to output area s. All these classes should have methods setdata(….), which allows setting data of a class object after its creation.
- In the main () function create one object of class Circle, Triangle, Rectangle and an array of pointers of the base class Figure named ptr_fig so that the first element of the array points to an object of type Circle, the second – to an object of the type Triangle, the third - to an object of type Rectangle. Create a pointer to a Rectangle object named ptr_rect and a pointer to a Triangle object named ptr_triang. Then use the code snippet:

```
int main()
{
	//--------------test 1-------------------------//
	//Objects of derived classes
	Circle c1(10);
	Triangle t1(2, 4);
	Rectangle p1(2,6);

	//Pointer of a base type class
	Figure *ptr_fig[] = {&c1, &t1, &p1, NULL};
	Rectangle *ptr_rect = NULL;
	Triangle *ptr_triang = NULL;

	srand(time(NULL));

	int i, imax=10, ind;
	for(i=0; i<imax; i++)
	{
		ind = rand()%4;
		ptr_fig[ind]->area();
		ptr_fig[ind]->disp();

		ptr_triang = (Triangle *)ptr_fig[ind];
		ptr_triang->setdata(20, 30);
	}

	system("pause");
	return 0;
}
```

- The index ind gets the value 0 or 1 or 2 or 3 randomly for each iteration of the loop.
- Using RTTI (dynamic type identification), determinate:

- Which object the base class pointer ptr_fig[ind] points to (please, use typeid () operator).
- If the ptr_fig[ind] pointer points to an object of class Rectangle, cast the pointer to the Rectangle type and obtain the pointer ptr_rect using dynamic_cast<>() operator. Retrieve side lengths and increase them 2 times. Count the area again and display it on the monitor. Find and fix bugs.

Please, consider the examples W42, W43 from https://torus.uck.pk.edu.pl/~fialko/ as samples.