TASK 1 (20p)

Create **rectangle** and **cylinder** classes derived (public) from **area_cl** given below. rectangle class will be calculate area of rectangle, cylinder class will be calculate area of cylinder (π = 3,14).

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

class area_cl{
    public:
    double height, width;
};
```

Both classes must have **double area (double h, double w)** function. Dimensions will be entered by user. The program you developed should work as in the example below.

Example (working code):

```
What is the dimensions? (Height and Width)
4
5
Cylinder's area is :102.05
Rectangle's area is :20
```

Note 1: width value is diameter for cylinder

Note 2: Codes must be start with student numbers, names and surnames in your group (an example given below)

```
1   // 20xxxxxxxx Aaaaaa Bbbbbb
2   // 20xxxxxxxx Ccccc Dddddd
```

Note 3: You must check your code for any vulnerabilities. Example:

```
Please enter two numbers :
a
s
You entered characters, please enter numbers
Please enter two numbers :
4
7
4+7=11
```

TASK 2 (20p)

Answer the questions below. Give a short answer.

1- What is the responses of **new** to an allocation error?

2- What is difference between **reference** and **pointer**?

3- What is the advantages of **reference**?

TASK 3 (20p)

Fill the table below.

Derivation Type	**Main Class Member Type**	**Derivated Class Member Type**
Public	public	
	private	
	protected	
Private	public	
	private	
	protected	
Protected	public	
	private	
	protected	

TASK 4 (20p)

Create a namespace named **MyNamespace**. Define a function named **cout** inside this namespace. In main function, ask the user to input a string. Send the string entered by the user to the cout function and print it on the screen by adding "Your input is " at the beginning.

Use std namespace for input and output operations.

Note 1: Codes must be start with student numbers, names and surnames in your group (an example given below)

```
1   // 20xxxxxxxx Aaaaaa Bbbbbb
2   // 20xxxxxxxx Cccccc Dddddd
3   // 20xxxxxxxx Eeeeee Ffffff
```

Note 2: You must check your code for any vulnerabilities. Example:

```
Please enter two numbers :
a
s
You entered characters, please enter numbers
Please enter two numbers :
4
7
4+7=11
```

REPORT RULES (20p)

Write the subject of the e-mail you will send as **x.Education 20xxxxxxxx**. You just need to write the student number of the student who sent the mail in your group. Do not write down the student numbers of all group members.

Send only **1 e-mail** for each group. For each group, mails received after the first sent mail will not be evaluated, including if you send a wrong e-mail.

In reports you should add a screenshot of a executed code.

Your source code should be ready to **compile**.

Reports should be written in **English**. Reports written in Turkish will not be **evaluated**.

You will send your reports to **cucen216@gmail.com**. The deadline for submission of report **May 25th 23:59**. Reports submitted after this date will not be **evaluated**.

If the above mentioned rules are not followed, **your report score will decrease.**