

ESET 269 Summer 2020 – Lab 3: Functions and Structures

If using the Launchpad, use the Lab Template project. This lab can also be done using another IDE.

Code 1: Several factors are used to determine if a laser system can qualify for an upgrade. These include:

- Energy Class Level (ECL) 2 or 3
- Peak Output Power (POP) is less than 260 Joules
- Optical replacement percentage (ORP) is less than 30%

All 3 criteria must be TRUE for a laser system to be eligible for an upgrade.

Below is a table with three different laser systems.

System Name	ECL	POP	ORP
OPA Front	3	289	0.30
Stretcher Amp	2	200	0.25
Long Pulse	4	170	0.33
Target Chamber	3	236	0.15

The cost of an upgrade is given by the following formula:

$$\text{Upgrade Cost in \$} = \left((\text{ECL} * 300) + \left(\frac{\text{POP}}{100.5} * 10,000 \right) \right) * \text{ORP}$$

Implement the table as a structure and write a program to determine which laser system is eligible for an upgrade, and the upgrade cost.

In addition, the following are required

- Implement a function to determine which laser system, or systems, are eligible for an upgrade.
- Implement a function to calculate the total cost of the laser upgrade for any eligible system.
- Functions can be implemented in any manner. i.e. the return type and input parameters are of your choosing.

Example console window output is given below.

```
The laser systems can be upgraded:
Stretcher Amp which costs $5125.12
Target Chamber wich costs $3657.39
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