Operating Systems

Your task is to prepare solution for creating operating system with multiple running applications.

Each **Operating System** should implement following functions (implementation will vary depending on system type and version)

1) Add()
2) StartAll()
3) CloseAll()

You should create two types of operating systems – Linux and Windows:

Windows – Defined with parameter errorTimes – number describing after how many operations next one will be "special". For example, if errorTimes = 5, every 5th operation will be "special".

1) Function Add() will add Computer Program to the list of programs. If this is a "special" case, program will be started.
2) Function StartAll() will start all Computer Programs in the list. Starting each program is treated as a new operation. If this is a "special" case, there was an error and a program was not started.
3) Function CloseAll() will close all Computer Programs in the list. Closing each program is treated as a new operation. If this is a "special" case, there was an error and a program was not close.

Linux – it always works, so default functionality:

1) Function Add() will add Computer Program to the list.
2) Function StartAll() will start all Computer Programs in the list.
3) Function CloseAll() will close all Computer Programs in the list.

Each **Computer Program** should implement following functions (implementation will vary depending on program type and version):

1) Start()
2) Use()
3) Close()

Painter – Defined with parameter size – default size of drawing canvas and name – name of the process

1) Function Start() – if programs is working should write to the console "[name] is already working". Otherwise should mark as working and should write to the console "[name] started".
2) Function Use() – if programs is working, will write to the console that "[name] is doubling picture size "and double canvas size, otherwise should write to the console "Please start [name] first"
3) Function Close() - should mark programs as not working and should inform the user what was last canvas size. Then it should reset to default size.

Browser – Defined with number of maximum tabs that it supports and name – name of the process

1) Function Start() – will use Use()
2) Function Use() – will increase number of running tabs by 1 and inform user of the current number of tabs. If current number of tabs equals maximum number of tabs, will use Close()
3) Function Close() – will close last two tabs and inform user about it. Not that number of running tabs can never be less than 0.

Task:

- Create Windows operating system with error times equaled to 3. This operating system is running 7 Painters with default size 10: "Alpha", "Beta", "Gamma", "Delta", "Sigma", "Tau", "Zeta".
- Create Linux operating system with 7 Browsers having maximum number of tabs equaled to 5: "Alpha", "Beta", "Gamma", "Delta", "Sigma", "Tau", "Zeta"
- Run: 2x StartAll() , 2x UseTasks() and 2x CloseAll() on both above setups.
- You can be asked to create different types of Operating Systems and Browsers (for example Windows with error times equaled to 7).

Notes:

- Solution should support unlimited varieties of Operation Systems and Computer Programs types and objects.
- Adding those should be easy and it should be performed without modifying previously defined code, especially **CreateOS()** function.
- You can't modify ComputerProgram and OperatingSystem classes.
- You can't use switch or any other conditional operations on ComputerPrograms and OperatingSystem types.
- You can't predetermine static number of previously defined ComputerPrograms and OperatingSystems.