



University of Dhaka  
**Institute of Information Technology (IIT)**  
Bachelor of Science in Software Engineering (BSSE)



**Course:** SE 506 Design Patterns  
**Lab 03:** Printer Management in a Large Office  
**Time:** 2 hours

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*[5 points]*

In a large office with multiple departments, managing printers can become inefficient if each printing request leads to the creation of a new printer instance. To handle this effectively, you need to design the system ensuring that each department has only one printer assigned to it, which is reused for all printing tasks from that department. You are not allowed to create more than one instance of printer for a department.

The system maintains a registry of printer instances for each department. When a printing request comes from a specific department, the system checks the registry to retrieve the corresponding printer. If no printer is assigned to the department, a new printer instance is created, registered, and then used for subsequent requests from that department.

Now implement the above system using appropriate design pattern(s).