



## **K. J. Somaiya College of Engineering, Mumbai-77**

(Autonomous College Affiliated to University of Mumbai)

**Batch: B1**

**Roll No.: 1711072**

**Experiment / assignment / tutorial No.5**

**Grade: AA / AB / BB / BC / CC / CD / DD**

**Signature of the Staff In-charge with date**

**Title:** Understanding the Booting Process, Installation of OS and Device Drivers

**AIM :** Understanding the Booting Process, Installation of OS and Device Drivers

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**Expected OUTCOME of Experiment:**

**CO 2:** To assemble, administrate and upgrade the system.

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**Books/ Journals/ Websites referred:**

1. IBM- PC BY Govindrajalu, THM

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**Pre Lab/ Prior Concepts:**

### **1) Software Installation Snap-in CONFIGURATION**

**Preparing Installation:**

1. **Buy an copy of Windows 8.** If you already have a CD version of Windows 8, skip this step.
2. **Back up your computer's files.** Since you'll be replacing whatever operating system and files you currently have with Windows 8, make sure that you have a backup copy of everything that you want to keep before you proceed.
3. **Insert the Windows 8 CD into your computer.** The CD should go logo side-up.
  - If your computer doesn't have a CD slot, you'll need to buy a USB CD reader and attach it to your computer.



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4. **Restart your computer.** Open **Start**, click **Power**, and click **Restart** in the pop-up menu. Your computer will begin to restart.
5. **Begin rapidly pressing the BIOS key.** This key is usually either an **F** key (e.g., F2), the Esc key, or the Del key. You'll need to do so immediately after the screen goes black.
  - The key that you're supposed to press may briefly be listed at the bottom of the screen.
  - You can check your computer's manual or online documentation to see which key opens the BIOS.
  - If you see the startup screen, you'll need to restart the computer and try again.
6. **Find the "Boot Order" section.** On most computers, you'll use the arrow keys to select the "Advanced" or "Boot" tab to do this.
  - Some BIOS models have the boot order options on the initial page on which you arrive.
7. **Select your computer's CD drive.** It should be labeled "CD Drive" or "Disk Drive" (or something similar). Again, use the arrow keys to select the appropriate option.
  - If you're using a USB CD drive, you may instead have to select "Removable Storage" (or similar) here. Make sure that you don't have any other USB items (e.g., a flash drive) plugged in if you do this.
8. **Move the drive to the top of the boot list.** With the "CD Drive" (or similar) option selected, press the + key until the selected option is at the top of the boot list.
  - If this doesn't work, check the key legend on the right side (or bottom) of the screen to see which key you should press to move the selected option.
9. **Save and exit.** For most BIOS pages, you'll press a key to do this; check the on-screen key legend to see which key you need to press. Once you've saved and exited, your computer should begin booting into Windows 8.

### Installing Windows:

Select a language, time, and keyboard setting. In most cases, the information on this window should already be correct; if you see incorrect information (e.g., the wrong time/region), click the item's drop-down box and select the correct information in the drop-down menu.

1. Click Next. It's in the bottom-right corner of the window.
2. Click Install now. This option is in the middle of the window.
3. Enter your Windows 8 product key. Type in the 25-character code that's listed on the Windows 8 CD case, box, or manual, then click Next to proceed.
  - If you bought your Windows 8 CD back when Windows 8 came out, you may have a copy of the code in an email in your Microsoft-registered email account.
4. Check the "I accept" box. It's near the bottom of the window.
5. Click Accept. This option is in the bottom-right corner of the window.



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- You may instead click have to click Next here.
6. Click Custom Install Windows only. It's an option on the "Which Type of Installation do you Want" screen.
7. Click Drive options (advanced). You should see this option near the middle of the page.
8. Delete the existing information. In the window near the top of the page, click a drive name, then click Delete and confirm the decision if prompted. Repeat this process for all drives listed.
9. Click Unallocated space. This should be the only option in the window near the top of the page.
10. Click New. It's near the bottom of the page.
11. Click Apply, then click Next. Both buttons are at the bottom of the page. Doing so will confirm your installation location and begin installing Windows 8 onto your computer.
12. Wait for Windows 8 to finish installing. Your computer will restart multiple times during the installation process. Once Windows 8 is done installing, you should be at the login screen.
  - You may be prompted to do some personalization work (e.g., selecting a theme and color) before you can continue to use Windows 8.

### The built in snap-ins are:

- **ActiveX Control** – You can add individual ActiveX controls to view and configure. These Internet Explorer plug-ins add functionality to the browser.
- **Authorization Manager** – You can set permissions for Authorization Manager-enabled applications.
- **Certificates** – You can configure different certificate stores available on the system. Certificates help provide a secure operating environment. You can use them for identification, securing data and securing communications. There are certificate stores for users, applications, and the system itself.
- **Component Services** – You can manage the system's COM+, or Component Services configuration. You can also configure Distributed Computer Object Model (DCOM) and Distributed Transaction Coordinator (DTC) settings. These are especially important when programs need to communicate between multiple computers.
- **Computer Management** – This is actually a collection of snap-ins used for task scheduling, disk management, performance monitoring, and many other configuration and management tasks.
- **Device Manager** – This is for viewing and configuring hardware installed on the system. You can disable devices, update drivers and troubleshoot potential issues.
- **Disk Management** – This is for disk and volume management. You can create volumes, format disks and enable fault tolerance.



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- **Event Viewer** – This is for viewing system event logs that help you determine if your system or applications are having problems. You can also use the Security log to determine if there has been unauthorized access.
- **Folder** – This is to add a folder for organizing your snap-ins, which comes in handy if you've added numerous snap-ins to a single MMC console.
- **Group Policy Object Editor** – This lets you configure the Group Policy Objects on the system.
- **IP Security Monitor** – This helps you monitor the status of your IP Security (IPsec) configuration, which secures communication between computers.
- **IP Security Policy Management** – This helps you understand and configure the settings in your IPsec policy.
- **Link to Web Address** – This lets you add a Web page to the MMC, which can be useful for applications and systems with Web-based management.
- **Local Users and Groups** – This lets you configure users and groups on the local system, add user accounts, delete user accounts and configure various user properties.
- **NAP Client Configuration** – This lets you configure Network Access Protection (NAP) client configuration settings.
- **Performance Monitor** – This lets you monitor your system performance, including memory, hard disks, processors and a number of other components.
- **Print Management** – This helps you manage print servers and printers connected to the system.
- **Resultant Set of Policy** – This shows you what settings will be applied by your Group Policy settings, without actually applying them to the system.
- **Security Configuration and Analysis** – This analyzes your configuration and security templates.
- **Security Templates** – This lets you edit the security templates you applied to your system.
- **Services** – This lets you view and configure properties for services running on the system. You can disable, start, stop or restart services; configure authentication and fault tolerance.
- **Shared Folders** – This lets you view properties and status information for file shares. You can see what folders are being shared and who's accessing them.
- **Task Scheduler** – This lets you schedule tasks to be automatically run at specified times or at specified intervals.
- **TPM Management** – This lets you configure the Trusted Platform Module, which generates keys for cryptographic operations.
- **Windows Firewall with Advanced Security** – This lets you configure Windows Firewall settings to control what processes, applications, and systems can access your system or generate network traffic from your system.
- **WMI Control** – This lets you configure and manage the Windows Management Instrumentation (WMI) service, for managing and monitoring Windows



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### **Booting Process:**

#### **The Five Steps of the Boot Sequence:**

Computers large and small must have some type of start-up process, which is typically called the "boot" process. During this set of steps the computer checks itself to be sure all is well, loads some minimal operational software and loads the operating system. The term "boot" is a shortened version of the word "bootstrap," which was used in the early days of computing to describe the process whereby the computer pulled itself up by its "bootstraps."

##### **1. Power Up**

The first step of any boot process is applying power to the machine. When the user turns a computer on, a series of events begins that ends when the operating system gets control from the boot process and the user is free to work. When the computer is turned on, the central processor executes some startup code in ROM that is located on the motherboard.

##### **2. Power-On Self Test**

The next step in the boot process is called the POST, or power on self test. This test checks all connected hardware, including RAM and secondary storage devices to be sure it is all functioning properly. After POST has completed its job, the boot process searches the boot device list for a device with a BIOS on it.

##### **3. Find a Boot Device**

The I/O system is essential to the operation of the computer because it defines the rules for communications between the CPU and the other devices attached to the computer via the motherboard. The I/O system, sometimes found in the "io.sys" file on the boot device, provides extensions to the BIOS located in ROM on the motherboard.

##### **4. Load the Operating System**

Once the hardware functionality is confirmed and the input/output system is loaded, the boot process begins loading the operating system from the boot device. The OS is loaded into RAM, and any instructions specific to the particular operating system are executed. The actual operating system is somewhat irrelevant, as the computer will follow the same boot pattern in any case.

##### **5. Transfer Control**

Once the previous steps are complete and the operating system is safely loaded into RAM, the boot process relinquishes control to the OS. The OS then proceeds to execute any pre-configured startup routines to define user configuration or application execution. At the end of the handoff, the computer is ready for use.



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### **2) Software Installation and Maintenance Scenarios**

#### **Software Maintenance:**

Software maintenance is widely accepted part of SDLC now a days. It stands for all the modifications and updates done after the delivery of software product. There are number of reasons, why modifications are required, some of them are briefly mentioned below:

- **Market Conditions** - Policies, which changes over the time, such as taxation and newly introduced constraints like, how to maintain bookkeeping, may trigger need for modification.
- **Organization Changes** - If there is any business level change at client end, such as reduction of organization strength, acquiring another company, organization venturing into new business, need to modify in the original software may arise.
- **Client Requirements** - Over the time, customer may ask for new features or functions in the software.
- **Host Modifications** - If any of the hardware and/or platform (such as operating system) of the target host changes, software changes are needed to keep adaptability.

**Conclusion:** Thus installation of OS and Device Drivers was studied.

**Date: 08/03/2019**

**Signature of faculty in-charge**

**Department of Computer Engineering**