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| **Course Code: CT2364** | **Course Name: Lab: Internet of Things** |

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**Practical No 1**

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| **Aim**: To study Arduino Uno IoT Kit with ATMega 328 Microcontroller. |
| **Theory**:  **Requirement (Hardware/Software) :**  Hardware : Arduino Uno R3  Software: Ardino IDE  **Introduction**  Arduino is an open-source platform used for building electronics projects. Arduino consists of both a physical programmable circuit board (often referred to as a microcontroller) and a piece of software, or IDE (Integrated Development Environment) that runs on your computer, used to write and upload computer code to the physical board.  The Arduino platform has become quite popular with people just starting out with electronics, and for good reason. Unlike most previous programmable circuit boards, the Arduino does not need a separate piece of hardware (called a programmer) in order to load new code onto the board -- you can simply use a USB cable. Additionally, the Arduino IDE uses a simplified version of C++, making it easier to learn to program. Finally, Arduino provides a standard form factor that breaks out the functions of the micro-controller into a more accessible package.  alt text  This is an Arduino Uno  The Uno is one of the more popular boards in the Arduino family and a great choice for beginners. We'll talk about what's on it and what it can do later in the tutorial.  **Specifications of Arduino Uno-**  Microcontroller: ATmega328P  Operating Voltage: 5V  Input Voltage (recommended): 7-12V  Inout Voltage (limit): 6-20V  Digital I/O Pins: 14 (of which 6 provide PWM output)  PWM Digital I/O Pins: 6  Analog Input Pins: 6  DC Current per I/O Pin: 20 mA  DC current for 3.3V Pin: 50 mA  Flash Memory: 32 KB (ATmega328P) of which 0.5 KB used by bootloader  SRAM: 2 KB (ATmega328P)  EEPROM: 1 KB (ATmega328P)  Clock Speed: 16 MHz  LED\_BUILTIN: 13  Length: 68.6 mm  Width: 58.4 mm  Weight: 25 g  Arduino Uno  This is a screenshot of the Arduino IDE.  Believe it or not, those 10 lines of code are all you need to blink the on-board LED on your Arduino. The code might not make perfect sense right now, but, after reading this tutorial and the many more Arduino tutorials waiting for you on our site, we'll get you up to speed in no time! |
| **Installation Steps (Ardiuno IDE):**  **Step 1**: Get the latest version from the download page. You can choose between the Installer (.exe) and the Zip packages.  **Step 2**: When the download finishes, proceed with the installation and please allow the driver installation process when you get a warning from the operating system.  **Step 3**: Choose the components to install.  **Step 4**: Choose the installation directory (we suggest to keep the default one)  The process will extract and install all the required files to execute properly the Arduino Software (IDE)  **Installation screenshots:**    DRV Capture1  DRV Capture2  DRV Capture3 |
| **Conclusion:** I have learnt about Arduino Uno and how to set it up. |