

Department of Computer Science and Application

Report

Of

“Certificate Course of Internet of Things”

The department organized certificate course of “Internet of things” for the advance skill development. This one week certificate course of Internet of Things is organized in collaboration with Microspectra Software Technologies limited. The details about the course is given below:

Course Title: “Certificate Course of Internet of Things”

Course Duration: 1 weeks

About this course:-

Internet of Things or IoT in short, is the idea of making devices and objects smarter by linking them to the internet. IoT has promising applications for smart homes, wearable devices, smart cities, connected cars and more.



File commands

<code>ls</code>	Directory listing
<code>ls -al</code>	Formatted listing with hidden files
<code>cd dir</code>	Change directory to dir
<code>cd</code>	Change to home
<code>pwd</code>	Show current directory
<code>mkdir dir</code>	Create a directory dir
<code>rm file</code>	Delete file
<code>rm -r dir</code>	Delete directory dir
<code>rm -f file</code>	Force remove file
<code>rm -rf dir</code>	For remove directory dir
<code>cp file1 file2</code>	Copy file1 to file2
<code>cp -r dir1 dir2</code>	Copy dir1 to dir2: create dir2 if it doesn't exist
<code>mv file1 file2</code>	Rename or move file1 to file2. If file2 is an existing directory, moves file1 into directory file2
<code>ln -s file link</code>	Create symbolic link link to file
<code>touch file</code>	Create or update file
<code>cat > file</code>	Places standard input into file
<code>more file</code>	Output the contents of file
<code>head file</code>	Output the first 10 lines of file
<code>tail file</code>	Output the last 10 lines of file
<code>tail -f file</code>	Output the contents of file as it grows, starting with the last 10 lines

Process Management

<code>ps</code>	display all currently active processes
<code>top</code>	display all running processes
<code>kill pid</code>	kill process id pid
<code>killall proc</code>	kill all processes named proc *
<code>bg</code>	lists stopped or background jobs; resume a stopped job in the background
<code>fg</code>	Brings the most recent job to the foreground
<code>fg a</code>	brings job a to the foreground

File Permissions

<code>chmod octal file</code>	change the permissions of file to octal, which can be found separately for user, group, and world by adding: <ul style="list-style-type: none"> • 4 - read (r) • 2 - write (w) • 1 - execute (x) Examples: <code>chmod 777</code> - read, write, execute for all <code>chmod 755</code> - rwx for owner, rx for group and world. For more options, see man chmod .
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SSH

<code>ssh user@host</code>	connect to host as user
<code>ssh -p port user@host</code>	connect to host on port port as user
<code>ssh-copy-id user@host</code>	add your key to host for user to enable a keyed or passwordless login

Searching

<code>grep pattern files</code>	search for pattern in files
<code>grep -r pattern dir</code>	search recursively for pattern in dir
<code>command grep pattern</code>	search for pattern in the output of command
<code>locate file</code>	find all instances of file

System Info

<code>date</code>	show the current date and time
<code>cal</code>	show this month's calendar
<code>uptime</code>	show current uptime
<code>w</code>	display who is online
<code>whoami</code>	who you are logged in as
<code>finger user</code>	display information about user
<code>uname -a</code>	show kernel information
<code>cat /proc /cpuinfo</code>	cpu information
<code>cat /proc /meminfo</code>	memory information
<code>man command</code>	show the manual for command
<code>df</code>	show disk usage
<code>du</code>	show directory space usage
<code>free</code>	show memory and swap usage
<code>whereis app</code>	show possible locations of app
<code>which app</code>	show which app will be run by default

Compression

<code>tar cf file.tar files</code>	create a tar named file.tar containing files
<code>tar xf file.tar</code>	extract the files from file.tar
<code>tar czf file.tar.gz files</code>	create a tar with Gzip compression
<code>tar xzf file.tar.gz</code>	extract a tar using Gzip
<code>tar cjf file.tar.bz2</code>	create a tar with Bzip2 compression
<code>tar xjf file.tar.bz2</code>	extract a tar using Bzip2
<code>gzip file</code>	compresses file and renames it to file.gz
<code>gzip -d file.gz</code>	decompresses file.gz back to file

Network

<code>ping host</code>	ping host and output results
<code>whoiis domain</code>	get whois information for domain
<code>dig domain</code>	get DNS information for domain
<code>dig -x host</code>	reverse lookup host
<code>wget file</code>	download file
<code>wget -c file</code>	continue a stopped download

Installation

Install from source:	
<code>./configure</code>	
<code>make</code>	
<code>make install</code>	
<code>dpkg -i pkg.deb</code>	install a package (Debian)
<code>rpm -Uvh pkg.rpm</code>	install a package (RPM)

Shortcuts

<code>Ctrl+C</code>	halts the current command
<code>Ctrl+Z</code>	stops the current command, resume with fg in the foreground or bg in the background
<code>Ctrl+D</code>	log out of current session, similar to exit
<code>Ctrl+W</code>	erases one word in the current line
<code>Ctrl+U</code>	erases the whole line
<code>Ctrl+R</code>	type to bring up a recent command
<code>!!</code>	repeats the last command
<code>exit</code>	log out of current session
<code>*</code>	use with extreme caution

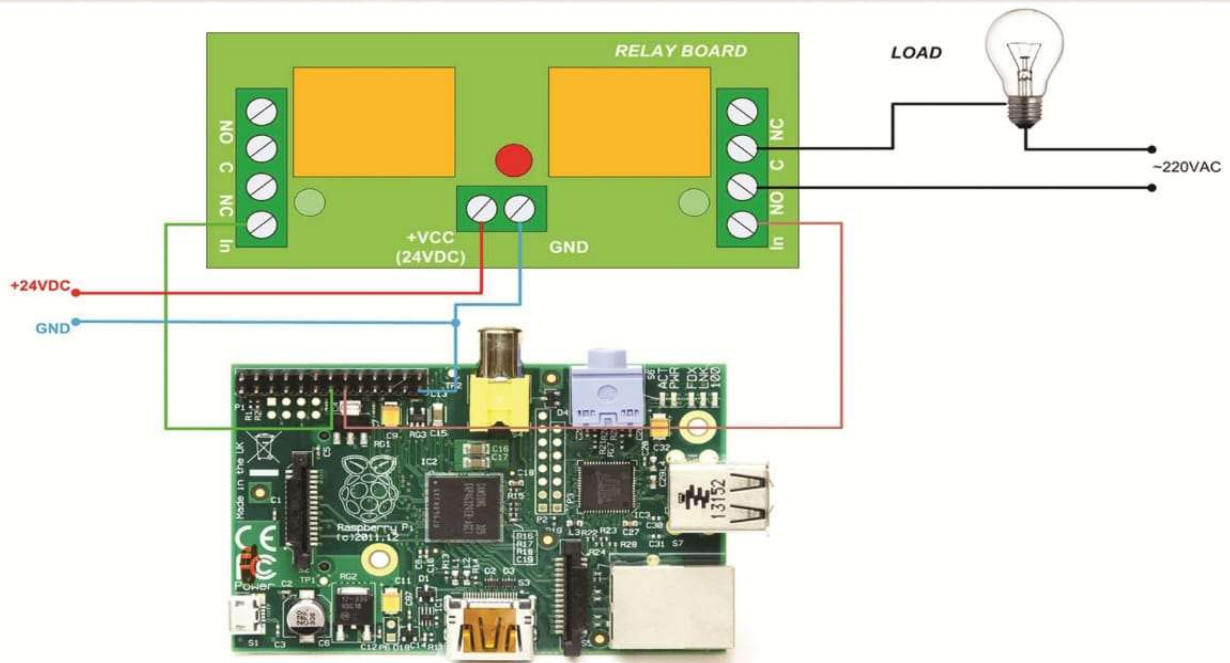
Linux/Unix Commands



Vidarbha Shikshan Prasarak Mandal's
G. S. Science, Arts and Commerce College, Khamgaon

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Connection of Relay to Raspberry Pi



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Different Sensors for Raspberry Pi

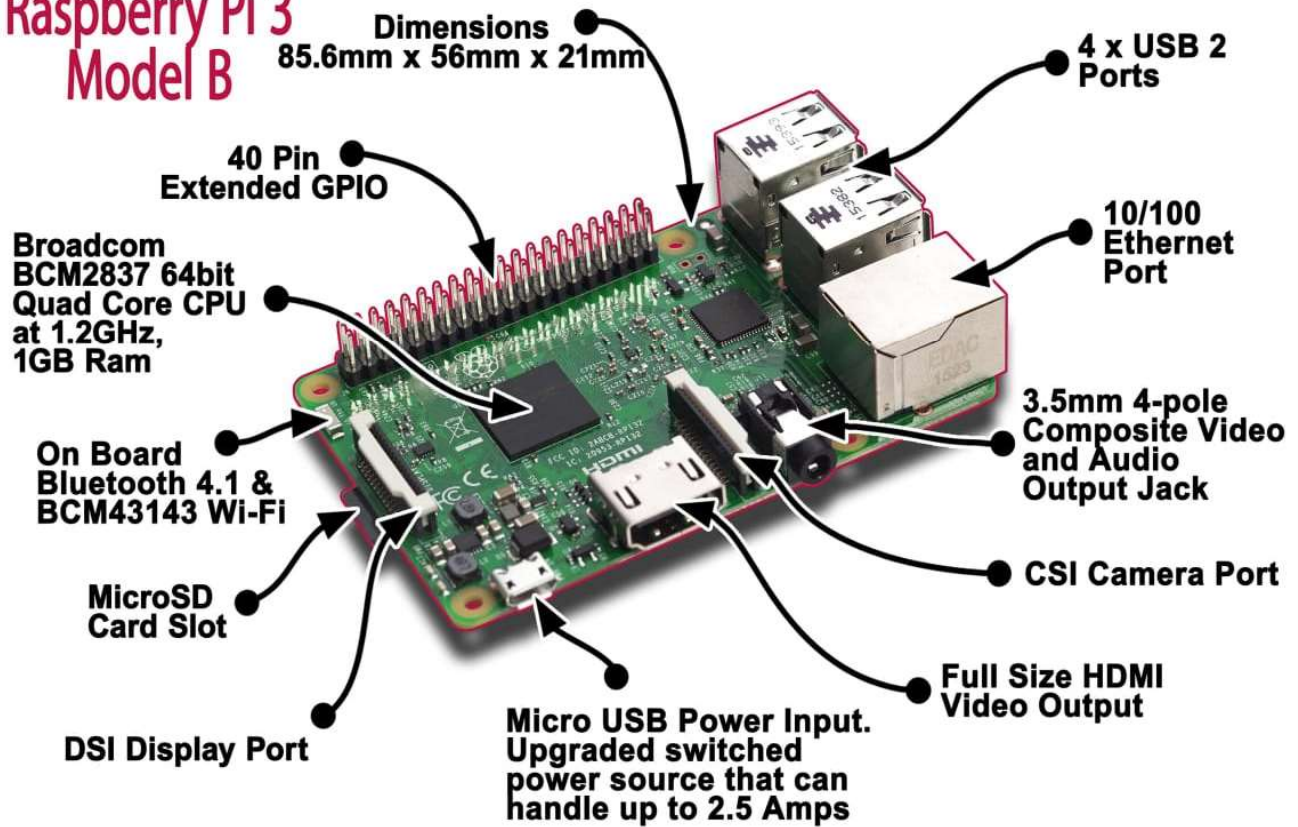
Raspberry Pi GPIO Header Reference

3V3 Power	1	2	5V Power
GPIO2 SDA1 I2C	3	4	5V Power
GPIO3 SCL1 I2C	5	6	Ground
GPIO4	7	8	GPIO14 UART0_TXD
Ground	9	10	GPIO15 UART0_RXD
GPIO17	11	12	GPIO18 PCM_CLK
GPIO27	13	14	Ground
GPIO22	15	16	GPIO23
3V3 Power	17	18	GPIO24
GPIO10 SPI0_MOSI	19	20	Ground
GPIO9 SPI0_MISO	21	22	GPIO25
GPIO11 SPI0_SCLK	23	24	GPIO8 SPI0_CE0_N
Ground	25	26	GPIO7 SPI0_CE1_N
ID_SD I2C ID EEPROM	27	28	ID_SC I2C ID EEPROM
GPIO5	29	30	Ground
GPIO6	31	32	GPIO12
GPIO13	33	34	Ground
GPIO19	35	36	GPIO16
GPIO26	37	38	GPIO20
Ground	39	40	GPIO21



Raspberry Pi 3 Model B

Dimensions
85.6mm x 56mm x 21mm

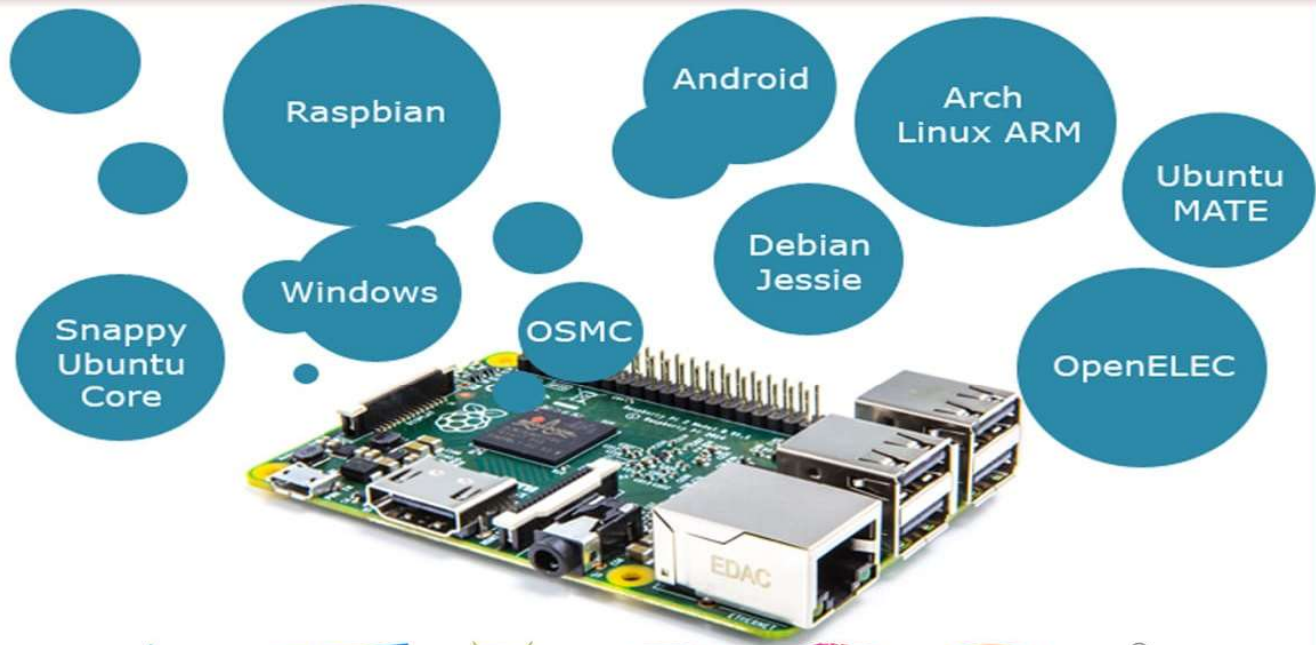




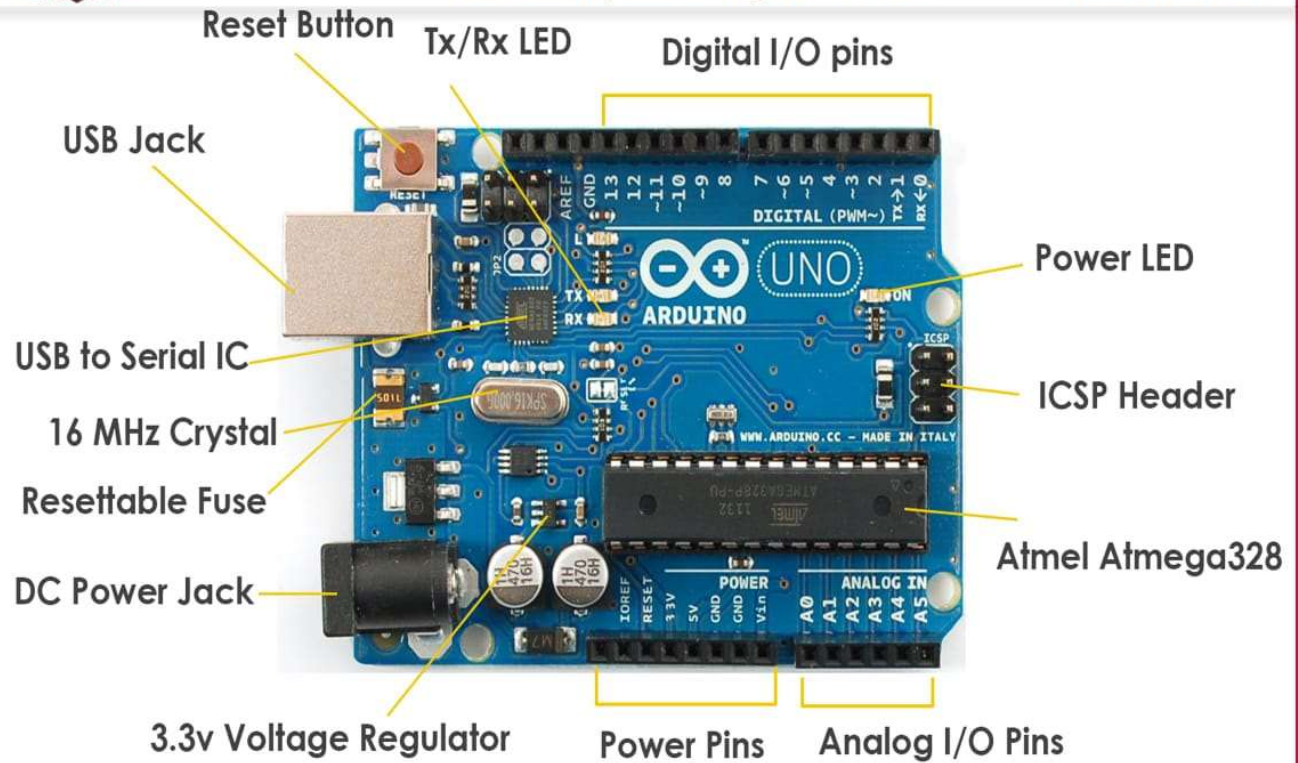
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Different Operating Systems for Raspberry Pi



Arduino Uno

HoD,
Computer Science & Application,
G S Science, Arts & Commerce College,
Khamgaon.