ETH Robotics Summer School
Linux & ROS Cheat Sheet

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File Commands

ls	list contents of files and directories
ls -a	list hidden files and directories
cd $DIR	change working directory to $DIR
cd	change working directory to home
mkdir $DIR	create a directory named $DIR
pwd	print working directory
rm $FILE	remove $FILE
rm -r $DIR	remove $DIR
rm -f $FILE	force remove $FILE
rm -rf $DIR	force remove $DIR
cp $FILE1 $FILE2	copy $FILE1 to $FILE2
cp -r $DIR1 $DIR2	copy $DIR1 to $DIR2
mv $FILE1 $FILE2	move $FILE1 to $FILE2
ln -s $FILE $LINK	create symbolic link $LINK to $FILE
touch $FILE	create $FILE
cat $FILE	view content of $FILE
cat > $FILE	write input into $FILE
more $FILE	print contents of $FILE
head $FILE	print the first 10 lines of $FILE
tail $FILE	print the last 10 lines of $FILE

System Info

env	print environment variables
date	print system date and time
cal	print current month calendar
uptime	print system uptime
w	print online users
whoami	print current user
finger $USER	print information about $USER
uname -a	print kernel information
cat /proc/cpuinfo	print cpu information
cat /proc/meminfo	print memory information
man $COMMAND	print user manual of $COMMAND
df	print disk usage
du	print directory space usage
free	print memory and swap usage
whereis $APP	print locations of $APP
which $APP	print print executable file of $APP

Compression

tar cf $FILE.tar $FILES	convert $FILES into $FILE.tar
tar xf $FILE.tar	extract files from $FILE.tar
tar czf $FILE.tar.gz $FILES	compress $FILES into $FILE.tar.gz using Gzip
tar xfz $FILE.tar.gz	extract files from $FILE.tar.gz using Gzip
gzip $FILE	compress $FILE and rename it as $FILE.gz
gzip -d $FILE.gz	decompress $FILE.gz back to $FILE

Network

ip address	print all internet protocol addresses
ping $HOST	ping $HOST and print results
whois $DOMAIN	print information about $DOMAIN
dig $DOMAIN	print DNS of $DOMAIN
dig -x $HOST	reverse lookup $HOST
wget $FILE	download $FILE

Terminator

Ctrl+Alt+T	launch a new terminal
Ctrl+C	kill the current process
Ctrl+Z	suspend the current process
fg	resume the suspended process in foreground
bg	resume the suspended process in background
Ctrl+D	log out of the current session
Ctrl+W	erase one word in the current line
Ctrl+U	erase the whole current line
Ctrl+R	reverse search in the previous commands
!!	execute the last command
exit	log out of the current session
Ctrl+Shift+E	split the window vertically vertically
Ctrl+Shift+O	split the window horizontally

Package

apt-get update	synchronize package index files from sources
apt-get upgrade	install latest versions of installed packages
apt-get install $PACKAGE	install $PACKAGE
dpkg -i $PACKAGE.deb	install a Debian package $PACKAGE.deb
./configure	configure building settings
make	build the program from source code
make install	install the program

Secure Shell (SSH)

ssh $USER@$HOST	connect to $HOST as $USER
ssh $IP_ADDRESS	connect to $IP_ADDRESS
ssh -p $PORT $USER@$HOST	connect to $HOST on $PORT as $USER
ssh-copy-id $USER@$HOST	add the key to $HOST as $USER

Searching

grep $PATTERN $FILE	search for $PATTERN in $FILE
grep -r $PATTERN $DIR	recursively search for $PATTERN in $DIR
$COMMAND | grep $PATTERN	search for $PATTERN in $COMMAND’s output
locate $FILE_NAME	find all files whose name contain $FILE_NAME

Git

git clone $URL	clone the repository from $URL
git status	print current branch status $BRANCH
git branch $BRANCH	create a new branch named $BRANCH
git checkout $BRANCH	switch to the branch named $BRANCH
git merge $BRANCH	combine $BRANCH into the current one
git fetch	download all history from GitHub
git merge	combine remote branches into local branch
git push	upload all local branch commits to GitHub
git pull	update local branch from GitHub
git log	list version history for current branch
git log –follow $FILE	list version history for $FILE
git show $COMMIT	output content changes of $COMMIT
git add $FILE	stage $FILE
git commit -m "$MESSAGE"	commit staged file with $MESSAGE
git reset $FILE	reset $FILE
git reset –hard	reset all uncommitted changes
git clean -fd	recursively force remove unstaged files

.bashrc

ROS Run

roscore	invoke the core of ros
rosrun $PACKAGE $EXECUTABLE	run $EXECUTABLE in $PACKAGE
roslaunch $PACKAGE $LAUNCHFILE	launch $LAUNCHFILE in $PACKAGE

ROS Node

rosnode ping $NODE	test connectivity to $NODE
rosnode list	list active nodes
rosnode info $NODE	print information about $NODE
rosnode machine	list nodes running on the machine
rosnode kill $NODE	kill a running node

ROS Topic

rostopic list	print information about active topics
rostopic bw $TOPIC	display bandwidth used by $TOPIC
rostopic echo $TOPIC	print messages from $TOPIC
rostopic find $TYPE	find topics with $TYPE
rostopic hz $TOPIC	display publishing rate of $TOPIC
rostopic info $TOPIC	print information about $TOPIC
rostopic pub $TOPIC	publish data to $TOPIC
rostopic type$TOPIC	print type of $TOPIC

ROS Service

rosservice list	list active services
rosservice call $SERVICE $ARGS	call $SERVICE with $ARGS
rosservice find $TYPE	find services with $TYPE
rosservice info $SSERVICE	print information about $SERVICE
rosservice type $SSERVICE	print type of $SERVICE
rosservice uri $SERVICE	print uri of $SERVICE

ROS Parameter

rosparam list	list all parameter names
rosparam set $PARAM $VAL	set $PARAM to $VAL
rosparam get $PARAM	print value of $PARAM
rosparam load $YAML	load parameters from $YAML
rosparam dump $YAML	dump parameters to $YAML
rosparam delete $PARAM	delete $PARAM

ROS Bag

rosbag record $TOPIC	record $TOPIC into bag
rosbag info $BAG	print content summary of $BAG
rosbag play $BAG	play back content of $BAG
rosbag check $BAG	check play-ability of $BAG in current system
rosbag compress $BAG	compress $BAG using BZ2
rosbag decompress $BAG	decompress $BAG using BZ2

ROS Catkin Workspace

mkdir -p ~/catkin_ws/src **cd ~/catkin_ws** **catkin_make**	create a new catkin workspace
catkin build	build the whole workspace
catkin build $PACKAGE	build $PACKAGE
catkin clean	clean the whole workspace
catkin clean $PACKAGE	clear $PACKAGE

remember to source ~/catkin_ws/devel/setup.bash

ROS Visualization

ROS Visualization

TODO

ubuntu mono font for commands

tab auto-completion

tar explanation
is git reset unstage or reset?
simtime true
copyright
rosnode machine
column split
Cmakelist
ros launchfile

Variable Declaration VARIABLE stands for a variable whose name is VARIABLE. For example, FILE means a file named FILE.
sudo sudo means super user do, elevated right granted