CS 251: [Presentation:] LaTeX and gnuplot Inlab

- Handed out: 8/31 Due: 8/31 4:40 PM
- Please write (only if true) the honor code. If you used any source (person or thing) explicitly state it. You can find the honor code on the web page.

Overview

The goal of this lab is to move ahead in the "presentation" aspects. Specifically we will look at two invaluable packages, LaTeX (and friends), and `gnuplot`.

Pretasks

Make sure your previous (submitted) labs are linked up.

Tasks

1. **ssh, gnuplot:** In this question, we would like to study the effect of ssh X forwarding on the network. Before starting on the question, we would like you to read up about the tools `gnuplot`, `ssh` and `ping` and about ssh X forwarding. Proceed only when you have read up about these and tried each of them out a couple of times.

   (a) Choose the nsl-machine that is adjacent to yours and not being used. **Do not use any other machine.**

   (b) Open up a terminal window on the local machine and start pinging the adjacent machine. Collect statistics (see below). Close the session.

   (c) From another terminal window, start an `ssh` session into the same (adjacent) nsl machine and issue typical bash commands (cd, ls etc.). Collect statistics. Did the ping response times change significantly? Close the ssh session.

   (d) Now start a third ssh session into the machine with X forwarding enabled and start up our course Box2D simulation. Collect statistics. Close the session.

   (e) Finally start a ssh session with X forwarding and run a browser session for 120 seconds. Do your favourite browser activity.

   Collect about 50 data points in approximately 15 second interval for each case. (It's ok to be off by 2-3 seconds but all four experiments should correspond to the same time duration.) into files `noSsh.dat`, `ssh.dat` and `sshX[1,2].dat` for no ssh ,ssh and sshX experiments respectively. (You can collect more data and then trim the data set from the beginning and end). Write a script using `gnuplot` (`plot.sh`) to plot a box-and-whisker plot `https://en.wikipedia.org/wiki/Box_plot` of the ping timings in all cases of no ssh session, ssh session without X forwarding and ssh session with X forwarding. `plot.sh` should take the relevant files from the command line `noSsh.dat`, `ssh.dat` and `sshX[1,2].dat` and output `boxWhisker.png`. You need to include only commands that

do the data processing inside `plot.sh`. The data collection can be done manually and need not be present in `plot.sh`.

Note: Don't forget to close your ping session, and restrict this experiment to a decent time window (5-10 minutes) so as to not clog the network. Also (try this in your hostel) run a similar experiment when you do `rdesktop` and when you run a `vnc` session, and perhaps when you run `teamviewer`.

[20 Marks]

2. **Beamer:** In this task, you use `beamer` to make a presentation file (in pdf). The key idea here is to reuse the work done in outlab (or vice versa). If you write a paper in LaTeX it makes sense to make a presentation in `beamer`. (Ditto for MS Word and MS PowerPoint). Use `Beamer.tex` for the filename.

   (a) Title: The document must be titled "Brief Introduction of Beamer: A CS251 Report by Group XX." In the author list, it must have the names of all the group members and their rollnumbers and email addresses below their names. Include a date tag/field in the LaTeX document so that the date changes when you remake the presentation on a different date. [5 marks]

   (b) Overview. This should list broad sections you will cover in your slide. [2 marks]

   (c) Introduction. Write 2 or 3 "bullets" that get displayed one at a time, that is, not all at once. [5 marks]

   (d) Examples. This section has two subsections.
   In subsection 1, you should explain how to make a title page. It must have 2 columns: In first column, you will write code and in second column, you will insert screenshot of your output. Here is an example.

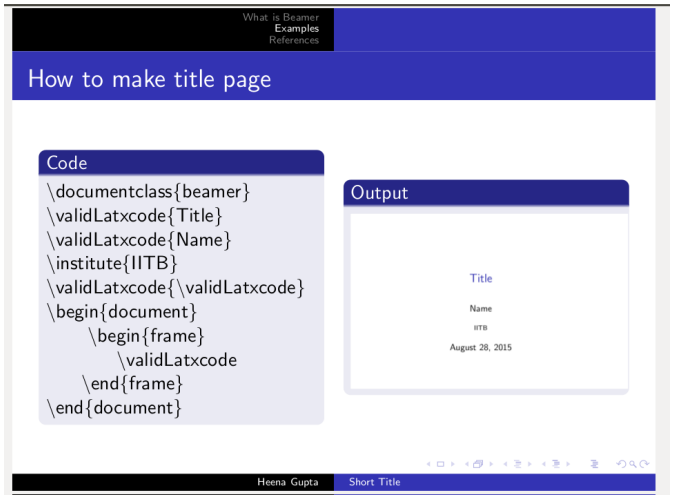

Figure 1: Sample Title Page

   In subsection 2, You have to explain at least one feature which is unique (hopefully) to your understanding of LaTeX. Something that caught your fancy. Perhaps something in this `http://tex.stackexchange.com/questions/253230/batman-equation-in-latex` Explain it in a way similar to the way you have provided explanations in subsection 1.

[18 marks]

3. **LaTeX and Indian Languages:** Do the same (Indic language) task as mentioned in the outlab with XeLateX.

   (a) You can use the following Devanagiri online key board.
   http://www.lexilogos.com/keyboard/devanagari.htm

   [0 marks]

   (b) Write a file `GM.tex` which contains the following text

   ॐ
   भूर्भुवः स्वः
   तत्सवितुर्वरण्यं
   भर्गो देवस्य धीमहि
   धियो यो नः प्रचोदयात् ॥

   [20 marks]

Submission Guidelines:

Submit `noSsh.dat`,`ssh.dat`,`sshX[1,2].dat` and `plot.sh` for task 1, `Beamer.tex` and all the included files, you wrote for task 2, `GM.tex` for task 3. Do not submit things that the TA can generate. Do not forget to put readme.txt file in a folder. The folder and its compressed version should both be named `lab06_groupXY_final`. Hence, you submit a tar.gz named `lab06_group07_final.tar.gz` if your group number is 7.

How We will Grade You

- Honor Code and package complete in all respects +2. **Incorrect or incomplete -2**.
- Marks corresponding to all the question is given along with the question itself.