1st Assignment WSE

PART 1 (individual and collaborative work)

Find samples of technical texts/genres/documents that are produced in your discipline (professional/academic). Bring the samples to class (print them if necessary) and get ready to share them with your partners to identify and discuss: genre, purpose, language function.

Document PAR Lab1
The objective of this laboratory session is to familiarise yourself with the hardware and software environment that you will use during this semester to do all laboratory assignments in PAR. From your local terminal booted with Linux[1] you will access boada, a multiprocessor server located at the Computer Architecture Department. To connect to it you will have to establish a connection using the secure shell command: "ssh -X parXXYY@boada.ac.upc.edu", being XXYY the user number assigned to you. Option -X is necessary in order to forward the X11 commands necessary to open remote windows in your local desktop[2]. Once you have the account credentials, the first thing you should do is to change the password for your account using "ssh -t parXXYY@boada.ac.upc.edu passwd"[3].

Node name	Processor generation	Interactive	Partition
boada-1	Intel Xeon E5645	Yes	interactive
boada-2 to 4	Intel Xeon E5645	No	execution
boada-5	Intel Xeon E5-2620 v2 + Nvidia K40c	No	cuda
boada-6 to 8	Intel Xeon E5-2609 v4	No	execution2
boada-9	Intel Xeon E5-1620 v4 + Nvidia K40c	No	cuda9

Audience: *PAR students*

- Also, it has some visuals to help understand the text.
- Read for learning.
- Need and want theory
- Can understand some technical vocabulary.
- Expect numerical and graphical information.
- Require clear explanations through definitions and examples. are interested in generalizations and details.
- Appreciate a friendly and didactic presentation of information.

Purpose: The purpose of this text is to explain to the PAR students how to start using Boada server. It has some technical vocabulary but is not so difficult to understand for the students.

Article: "How to get started with Continuous Integration"

https://www.atlassian.com/continuous-delivery/continuous-integration/how-to-get-to-continuous-integration

The purpose of this text is to help the reader to enter the world of Continuous Integration. First of all, the author of the article explains what Continuous Integration is about and some features. Then he gives some tips on how to use it properly. And finally, he explains the first steps to take if the reader wants to start using Continuous Integration.

Audience: *Technicians*

- Read to find out how to perform technical tasks.
- Are more interested in practical aspects than in theoretical ones.
- Have a good understanding of technical vocabulary.
- May have a limited knowledge of the theory unless they have a higher level.
- May seek some background information to increase understanding and to better
- Accomplish their tasks.
- Need and want visual information.
- Read thoroughly and follow explanations to the letter.

PART 2 (collaborative work)

Work in pairs or in groups of three (class group). Select one of your text samples and analyze the text at the pre-writing level. Discuss:

1. The purpose of the text. Identify the purpose of the whole document and sections. Refer to content and techniques the writer uses to achieve his/her purpose (including language function).

2. The audience. Identify the audience and justify it by referring to specific features of the text: selection of content and approach to topic, vocabulary, genre, etc.

3. Style and tone. Decide on the level of formality of the text and explain how it is related to audience and purpose. Show examples of uses.

The objective of this laboratory session is to familiarise yourself with the hardware and software environment that you will use during this semester to do all laboratory assignments in PAR. From your local terminal booted with Linux1 you will access boada, a multiprocessor server located at the Computer Architecture Department. To connect to it you will have to establish a connection using the secure shell command: "ssh -X parXXYY@boada.ac.upc.edu", being XXYY the user number assigned to you. Option -X is necessary in order to forward the X11 commands necessary to open remote windows in your local desktop2. Once you have the account credentials, the first thing you should do is to change the password for your account using "ssh -t parXXYY@boada.ac.upc.edu passwd"3.

Node name	Processor generation	Interactive	Partition
boada-1	Intel Xeon E5645	Yes	interactive
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However, in this course you are going to use only nodes boada-1 to boada-4, either interactively or through the execution queue, as explained in the next subsection. The rest of the nodes have restricted access and PAR users are not allowed to send jobs to their corresponding queues.
All nodes have access to a shared NAS (Network-Attached Storage) disk; you can access it through /scratch/nas/1/parXXYY (in fact this is your home directory, check by typing pwd in the command line). In addition, each node in boada has its own local disk which can be used to store temporary files non visible to other nodes; you can access it through /scratch/1/parXXYY. All necessary files to do each laboratory assignment will be posted in /scratch/nas/1/par0/sessions.

For the session today, copy lab1.tar.gz from that location to your home directory in boada and uncompress it at the root of your home directory with this command line: "tar -zxvf lab1.tar.gz".

In order to **set up** all environment variables you have to process the environment.bash file now available in your home directory with "source ~/environment.bash". Note: since you have to do this every time you login in the account or open a new console window, it is strongly recommended that you add this command line in the .bashrc file in your home directory4, a file that is executed every time a new session is initiated.

In case you need to transfer files from boada to your local machine (laptop or desktop in laboratory room), or vice versa, you have to use the secure copy scp command. For example if you type the following command "scp parXXYY@boada.ac.upc.edu:lab1/pi/pi seq.c ." in your local machine you will be copying the source file pi seq.c located in directory lab1/pi of your home directory in boada to the current directory, represented with the ".", in the local machine, with the same name.

1.1 Node architecture and memory

The first thing you will do is to investigate the architecture of the available nodes in boada. To do this execute interactively the lscpu and lstopo commands in order to obtain information about the hardware in boada-1 (which is identical to the other nodes boada-2 to boada-4):
      1. the number of sockets, cores per socket and threads per core in a specific node;
      2. the amount of main memory in a specific node, and each NUMAnode;
      3. the cache memory hierarchy (L1, L2 and L3), private or shared to each core/socket.
Fill in the table in the "Deliverable" section with the main characteristics of the node. Use the "--of fig map.fig" option for lstopo in order to get the drawing of the architecture of a node. Then you can use the xfig command to visualise the output file generated (map.fig) and export to a different format (PDF or JPG, for example) using File → Export in order to include it in your deliverable for this laboratory assignment5.

1.2 Execution modes: interactive vs queued
There are two ways to execute your programs in boada:

  1. via a queueing system (in one of the nodes boada-2 to boada-4);

  2. interactively (in boada-1 itself).

It is mandatory to use option 1 when you want to execute scripts that require several processors in a node, ensuring that your job is executed in isolation (and therefore reporting reliable performance results) and to avoid adding additional load to the interactive node accessed by all users; the execution starts as soon as a node is available. When using option 2 your execution starts immediately but will share resources with other programs and interactive jobs, not ensuring representative timing results. Usually, scripts for both options (submit-xxxx.sh and run-xxxx.sh, respectively) will be provided:

• **Queueing a job for execution**: "sbatch [-p partition] ./submit-xxxx.sh" . Additional parameters may be specified, if needed by the script, after the script name. If you do not specify the name of the partition with "-p partition" your script will run on the execution partition by default. Use "squeue" to ask the system about the status of your job submission. You can use "scancel" followed by the job identifier to remove a job from the queueing system. Note that partition names associated with each node name are shown in the last column of the table above. After the execution in an available node associated to the specified partition, in addition to the
files being generated by the script, two additional files will be created. Their name will have the script name followed by an ".e" and an ".o" and the job identifier. They will contain the messages sent to the standard error and standard output respectively during the execution of the job. You should check them to be sure the results make sense.

• **Interactive execution**: ./run-xxxx.sh. Additional parameters may be specified after the script name. Jobs interactively executed have a short time limit to be executed.

The previous text is a lab session manual from the Parallelism course. Since this document is about the first lab session, the document introduces the student to the hardware and software environment he/she is going to use during the semester.

1. Purpose of the text:

  The first purpose of the document is to instruct the student to access a multiprocessor server located at the Computer Architecture Department called Boada. The first section teaches the student how to establish that connection with the server, how to change the password of the boada account and how to work with the different nodes that the server provides and understand the different execution types that work for each one. The following part of the text is more related to the lab session's activities, and through different exercises it teaches the student how to access the main files for the session and the basic commands that he/she is going to use during the course. The last part of the text teaches the reader the 2 types of executions that exist (queued or interactive) and on what nodes of the server these need to be done.

  To sum it up, the main purpose of the file is to instruct the student in the lab environment that he/she is going to work throughout the semester, but it can also play another purpose if the reader is not a Parallelism student. That reader can also be a UPC

researcher, Master's degree student or even a professor that wants to access Boada and needs to know or remember what commands, nodes, types of execution are needed in order to use the server.

2. Audience:

The audience that this text is addressed to is mainly students that are enrolled in the Parallelism course, but it can also be addressed to more highly experienced students, like university researchers, PhD students or even Computer Architecture department professors, which they would be better listed as technicians.

On the one hand, students that read this document are an audience that read for learning the Parallelism theory in order to understand the microprocessing server of Boada, and need to put in practice the parallel execution functionality seen in class through the programs they execute. Students can understand some technical vocabulary about the subject because they have completed other courses related to the Parallelism course, although they need clear examples and definitions and expect graphical and numerical information so they can do the activities at the end of the class. The author of the document approaches the theory of the lab class in a friendly and didactic manner, by guiding (almost step-by-step) the student on how to use the different commands and files that he/she can find in Boada, so that when the programs are executed he/she can draw conclusions about what the codes and instructions are doing.

On the other hand, technicians that read this file will do it in a very different way than Parallelism students. Unlike them, technicians don't really show interest in the theory but they will rather want to find the sections of the text that show them how to perform the technical tasks that they need when accessing Boada. Technicians that access this server are expected to already have a good understanding of technical vocabulary although they might not need to have great knowledge of the theory of the subject if they just want to access the server and complete their technical tasks. Technicians expect clear explanations and visual information just like the table shown at the beginning of the text showing the different nodes that exist in Boada and their type of execution (Partition).

3. Style and tone:

To analyze the style and tone, we first have to bear in mind that this text is written to explain how to do a laboratory practice to some already known students. Taking this into account we can expect to have a formal style but with a short distance between the writer and the reader.

Let's start analyzing the style of writing. We can observe that the writer is not using contractions. As we know, this is an indicator that this could be a formal text. In general, the text is written with formal language and verbs from a Latin origin. With the exception of one phrasal verb (the one that I have found is "set up"). Also, the writer does not use imprecise expressions, but neither uses very formal "legalese" nor "bureaucratese" words and expressions. So, once we have analyzed that we can say that the word choice of the writer is not very formal but formal. Referring to the syntax, the writer uses shorter, more direct and less elaborate sentences and he makes use of simpler transition markers. In addition, he generally uses active voice and personal pronouns frequently. Finally, the grammar and punctuation is correct.

In conclusion, we can say that this text is written with a formal style with some points of neutral style.

If we talk about the tone, we can observe that the writer frequently makes use of personal pronouns, generally uses active voice and also uses expressions to refer to the reader and the relationship between the reader and the text. After analyzing these points we could think that the tone could be personal, but knowing this is a laboratory practice for students, we can say that the tone is didactic, which is very similar to the personal tone.