

Department of Computer Technology & Information Systems  
CTIS 166: Information Technologies  
Spring 2014 – 2015 Semester  
Lab Final: Sections 1, 2, 3  
Date: 11/05/2015

Surname, Name:

Section:

Student No:

**NOTICE TO THE STUDENTS**

Read the instructions carefully listed below and sign the box:

1. Textbooks, lecture notes, calculators with extensive memories, and any kind of computers are not permitted in the classrooms: if you have any, leave them on the instructor's desk.
2. Cell phones should be **totally switched off** (not in silent or flight modes) and do **not keep them with you**: either put them in your bags or leave them on the instructor's desk.
3. Permitted material to be kept on your desks are: pencils, sharpeners, erasers (and in case you may need: water and tissues). **Pencil boxes are strictly forbidden.**
4. Check your desk for any **graffiti**; the graffiti related to the course will be treated as an attempt to cheat.  
You are not allowed to **talk** to other students during the exam.

**Signature:**

5. Disobeying the above rules will be severely penalized and a **disciplinary action** will be conducted.
6. Please **place your ID (with photo)** on your desk for identity check.

**INSTRUCTIONS BEFORE STARTING THE EXAM**

Step1: `mkdir yourname-surname` (DO NOT use Turkish characters. For example, `mkdir Murat-Yildirim`)

Step 2: `cd yourname-surname` (For example, `cd Murat-Yildirim`)

**INSTRUCTIONS FOR UPLOADING YOUR WORK**

Step 0: Clean your history (`history -c`)

Step 1: Put your **history file** (`history > History.sh`) inside **yourname-surname**

Step 2: `cd ..` (Assuming that your present directory is **yourname-surname**)

Step 3: `zip -r yourname-surname` (For example, `zip -r Murat-Yildirim Murat-Yildirim`)

Step 4: See the contents of your zip file: `unzip -t yourname-surname`

Step 5: Upload the files **yourname-surname.zip** (For example, `Murat-Yildirim.zip`)

- 1) Given **a.txt**, we want to determine the lines containing string **Net** and not containing **Fox** and put them in files **Q1-1.txt**, **Q1-2.txt** and **Q1-3.txt** How would you do it using: (Do not forget to put your commands at the end of the files)

- `grep` (5 pts):

- `sed` (5 pts):

- `awk` (5 pts):

- 2) (15 pts) Write an Awk script **Q2.awk** which will compute grade point average of the course by using **grades.txt**. Also prints named of students with grade F.

Example Run:

```
awk -f Q2.awk grade.txt
```

Students with F grade:

fatma Got F

sibel Got F

Total Numbers: A= 3 B= 2 C= 1 D= 1 F= 2

- 3) (5 pts) Recursively search for files inside **/usr/include** directory which contain

pattern "math.h" and write the file names to **q3.txt**. (output redirection, do not forget to put the command at the end of file)

- 4) (20 pts) Write down a shell script **q4.sh** that takes one option either M, A or S and two integers a and b (as command arguments) in order to carry out the related operation:

Hint: To compare strings in the if statement, you can use the operator =.

M: Multiplying of two integers a and b:  $a*b$

A: Adding of two integers a and b:  $a+b$

S: Subtracting integer b from integer a:  $a-b$

For example, you can run this script as:

`./q4.sh 14 2 M` Here the corresponding output is The product of 14 and 2 is 28

`./q4.sh 6 5 A` Here the corresponding output is The sum of 6 and 5 is 11

`./q4.sh 19 3 S` Here the corresponding output is Subtraction 3 from 19 is 16

- 5) (15 pts) Write down a shell script that takes an integer as an argument. Using for loop compute sum of even numbered terms and compute number of such terms, named **q5.sh**. (If there are 9 terms, you should sum terms 2, 4, 6, 8. You are not allowed to use number of terms explicitly.)

Example Run:

```
./q5.sh 9
```

```
Sum of even terms is 20
```

- 6) (15 pts) Write the bash shell script **basic.sh** that reads any three integers as inputs (not as command arguments) to store them in three different variables, prints their sum if this sum is greater than 100 and their average if their sum is greater than 50 and otherwise "Their sum is less than 50" on the screen.

For example, you can run this script as

```
./basic.sh
```

```
Enter your three integers
```

```
30
```

```
50
```

```
60
```

```
Sum of (30,50,60) = 140
```

```
./basic.sh
```

```
Enter your three integers
```

```
10
```

```
20
```

```
30
```

```
Average of (10,20,30) = 20
```

```
./basic.sh
```

```
Enter your three integers
```

```
10
```

```
20
```

```
5
```

Their sum is less than 50

- 7) (5 pts) Write a cron entry to run `clean.sh` at every 4 hours, 15 minutes past, between June to August, every Sunday and copy your cron content to `q7.txt`.
- 8) (21 pts) Write each command to `q8.txt` in the same order that you used
- Compile `sleep.c` and create an object file called `run1`
  - Run `run1` on the background
  - Copy `run1` as `run2`, run on foreground and then suspend.
  - How would you put the process with job id 2 running in the foreground and then kill/terminate this process abnormally?
  - How would you put the process with job id 1 in the foreground?
  - How would you suspend the process with job id 1 running in the foreground?
  - How would you put the process with job id 1 in the background?
- 9) (5 pts) Find the files recursively under `/usr/include` directory whose name contains 7 characters, second character is `p` or `r` and ends with `".h"` and copy these files to `LabE/folder2`.
- 10) (5 pts) Create `myfiles.tar.bz2` which contains `LabE` directory using a single command.