An-Najah National University
Faculty of Engineering and IT

جامعة النجاح الوطنية
كلية الهندسة وتكنولوجيا المعلومات

# College of Engineering
# Department of Computer Engineering

## Lab0-P2: AWK+Regex

| | |
|---|---|
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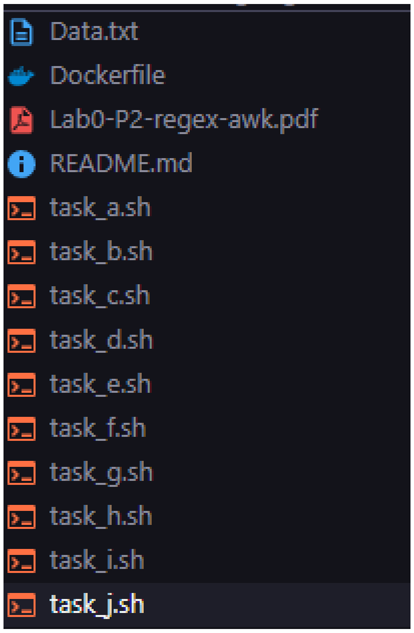
# ❖ Introduction

This report documents the implementation of AWK commands for data processing and analysis tasks as specified in Lab 0-P2. All tasks (a-j) have been successfully implemented using AWK scripting within a Docker Ubuntu container environment.

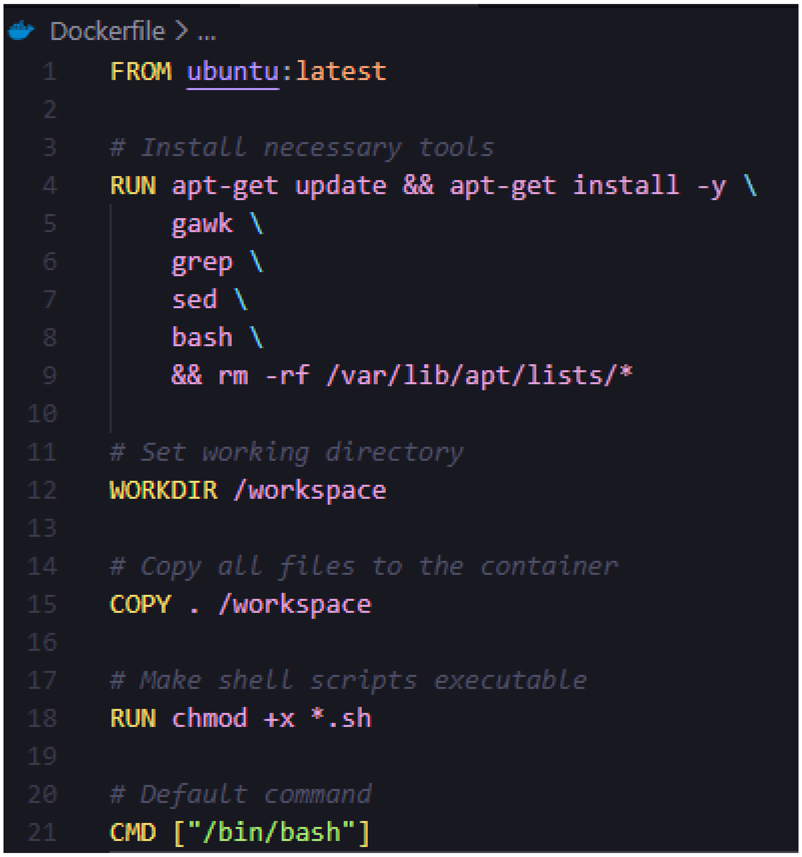


```
Data.txt
Dockerfile
Lab0-P2-regex-awk.pdf
README.md
task_a.sh
task_b.sh
task_c.sh
task_d.sh
task_e.sh
task_f.sh
task_g.sh
task_h.sh
task_i.sh
task_j.sh
```

**Project Files**

# ❖ Environment Setup

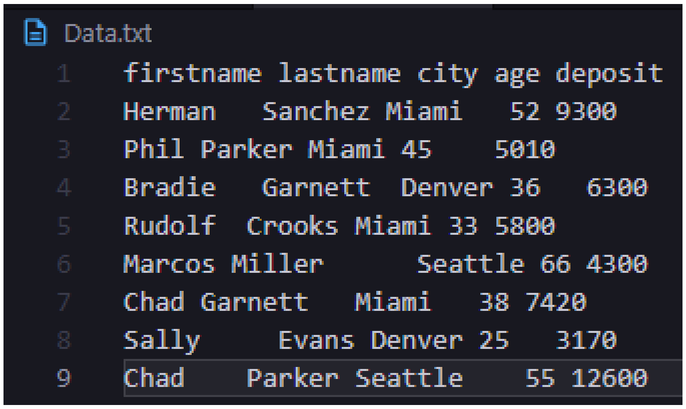
1- I used Docker to test my work so I made a  Docker file sets up a Ubuntu-based container with essential tools (gawk, grep, sed, bash) and copies the project files into /workspace. It ensures all shell scripts are executable and provides a consistent environment for running the project.



Dockerfile > ...

```
FROM ubuntu:latest

# Install necessary tools
RUN apt-get update && apt-get install -y \
    gawk \
    grep \
    sed \
    bash \
    && rm -rf /var/lib/apt/lists/*

# Set working directory
WORKDIR /workspace

# Copy all files to the container
COPY . /workspace

# Make shell scripts executable
RUN chmod +x *.sh

# Default command
CMD ["/bin/bash"]
```

2- **Data.txt :**



Data.txt

```
firstname lastname city age deposit
Herman    Sanchez Miami    52 9300
Phil Parker Miami 45    5010
Bradie    Garnett   Denver 36   6300
Rudolf   Crooks Miami 33 5800
Marcos Miller       Seattle 66 4300
Chad Garnett    Miami    38 7420
Sally      Evans Denver 25    3170
Chad     Parker Seattle     55 12600
```

3- **Task_* :** Scripts that perform different tasks.

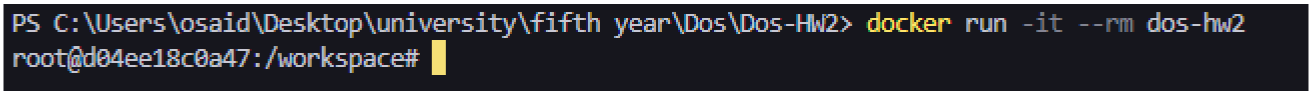
## ❖ Data Source

The tasks operate on Data.txt, which contains client information with the following structure:

1- firstname
2- lastname
3- city
4- age
4- deposit

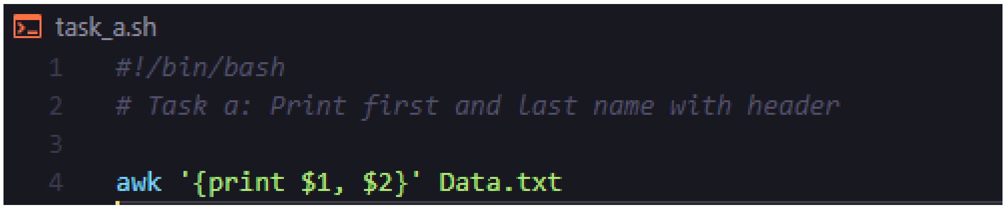
## ❖ Tasks Implementations

### First Run the Container:



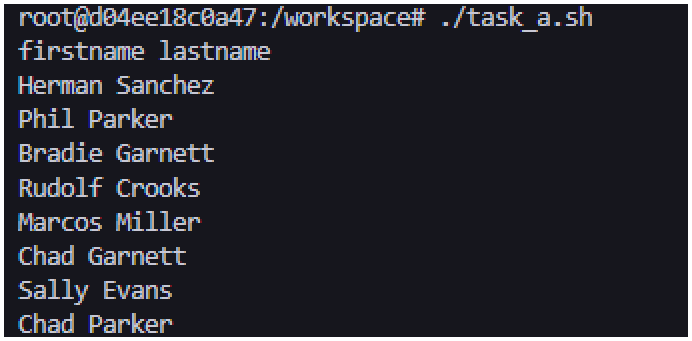
```
PS C:\Users\osaid\Desktop\university\fifth year\Dos\Dos-HW2> docker run -it --rm dos-hw2
root@d04ee18c0a47:/workspace#
```

### A) Print First and Last Names with Header:



```
#!/bin/bash
# Task a: Print first and last name with header

awk '{print $1, $2}' Data.txt
```

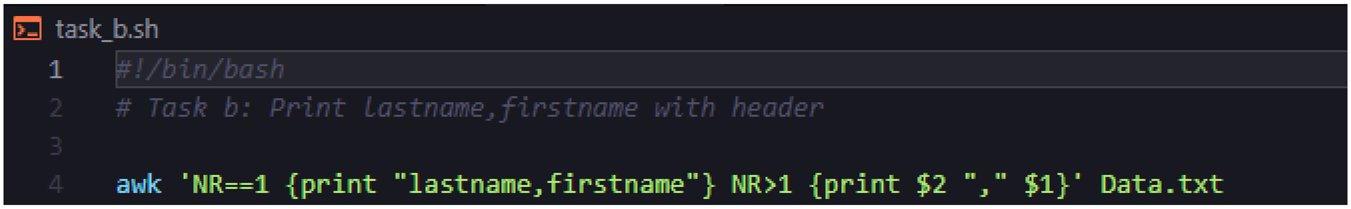
**Note: $1 refers to column 1 in Given Data**
**$2 refers to column 2 in Given Data**



```
root@d04ee18c0a47:/workspace# ./task_a.sh
firstname lastname
Herman Sanchez
Phil Parker
Bradie Garnett
Rudolf Crooks
Marcos Miller
Chad Garnett
Sally Evans
Chad Parker
```

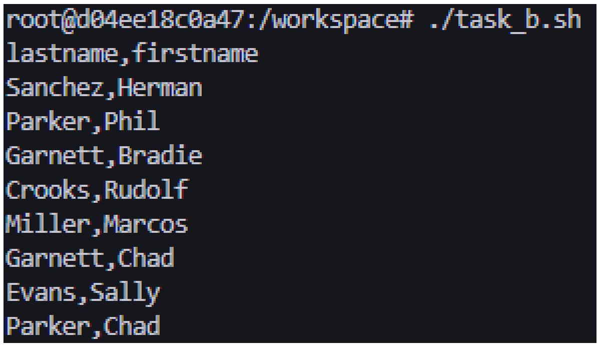
**Output**

## B) Reverse Name Order with Comma:



```
#!/bin/bash
# Task b: Print lastname,firstname with header

awk 'NR==1 {print "lastname,firstname"} NR>1 {print $2 "," $1}' Data.txt
```

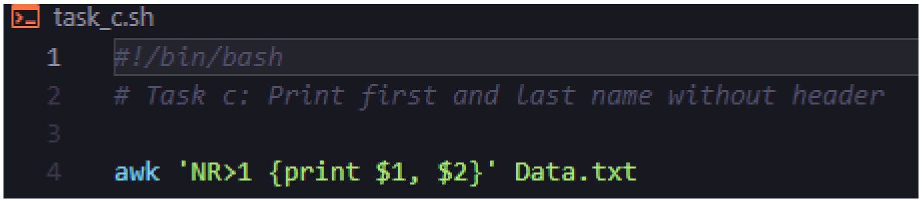
**Note:** **NR means Number of Record, NR==1 (Line one) NR>1 the rest of lines.**



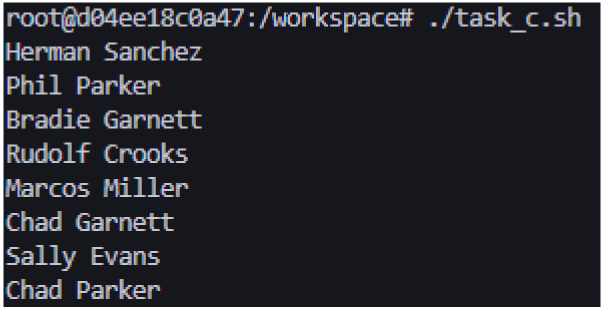
```
root@d04ee18c0a47:/workspace# ./task_b.sh
lastname,firstname
Sanchez,Herman
Parker,Phil
Garnett,Bradie
Crooks,Rudolf
Miller,Marcos
Garnett,Chad
Evans,Sally
Parker,Chad
```

**Output**

## C) Print Names Without Header:



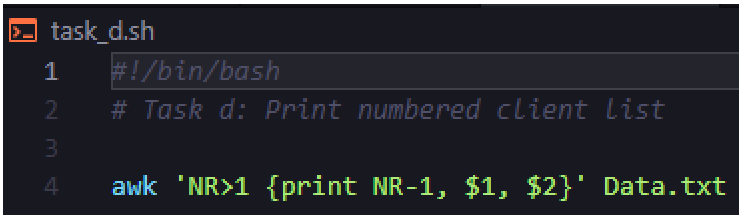
```
#!/bin/bash
# Task c: Print first and last name without header

awk 'NR>1 {print $1, $2}' Data.txt
```



```
root@d04ee18c0a47:/workspace# ./task_c.sh
Herman Sanchez
Phil Parker
Bradie Garnett
Rudolf Crooks
Marcos Miller
Chad Garnett
Sally Evans
Chad Parker
```

**Output**

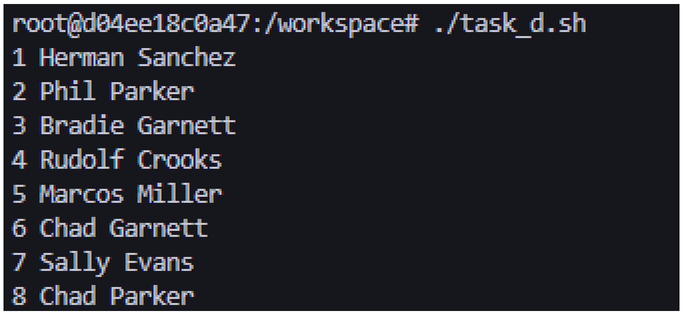
## D) Numbered Client List:



task_d.sh

```bash
#!/bin/bash
# Task d: Print numbered client list

awk 'NR>1 {print NR-1, $1, $2}' Data.txt
```

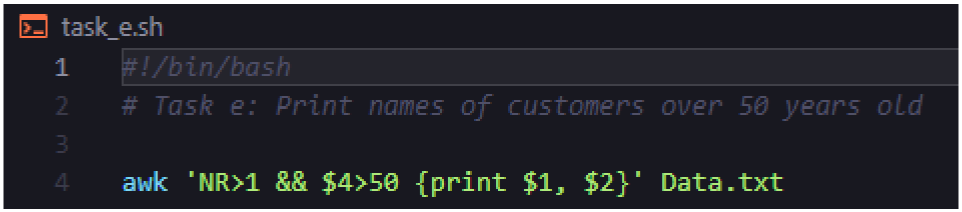
**Note: NR-1 means the line number for data only after ignoring the header.**



```
root@d04ee18c0a47:/workspace# ./task_d.sh
1 Herman Sanchez
2 Phil Parker
3 Bradie Garnett
4 Rudolf Crooks
5 Marcos Miller
6 Chad Garnett
7 Sally Evans
8 Chad Parker
```

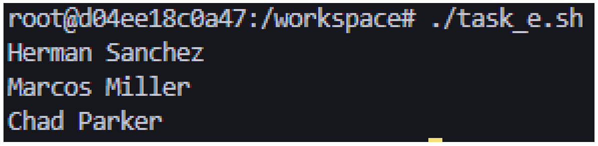
**Output**

## E) Customers Over 50 Years Old:



task_e.sh

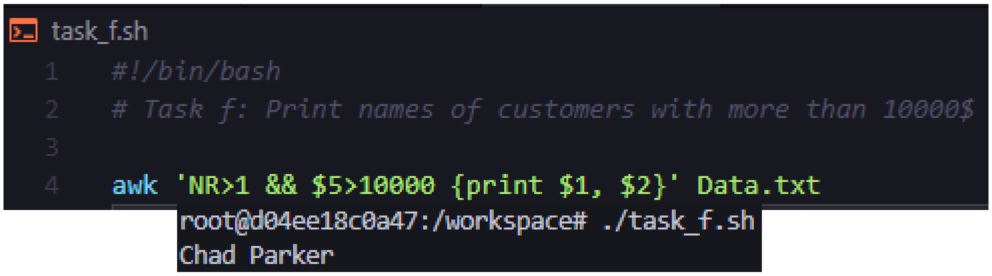
```bash
#!/bin/bash
# Task e: Print names of customers over 50 years old

awk 'NR>1 && $4>50 {print $1, $2}' Data.txt
```



```
root@d04ee18c0a47:/workspace# ./task_e.sh
Herman Sanchez
Marcos Miller
Chad Parker
```

**Output**

## F) Print names of customers with more than 10000$:



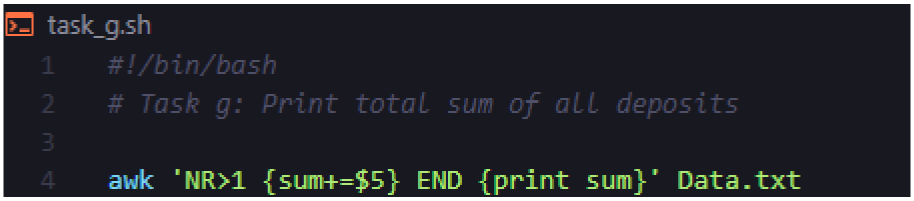
task_f.sh

```
#!/bin/bash
# Task f: Print names of customers with more than 10000$

awk 'NR>1 && $5>10000 {print $1, $2}' Data.txt
```

```
root@d04ee18c0a47:/workspace# ./task_f.sh
Chad Parker
```

**Output**

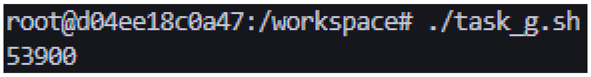
## G) Print total sum of all deposits:



task_g.sh

```
#!/bin/bash
# Task g: Print total sum of all deposits

awk 'NR>1 {sum+=$5} END {print sum}' Data.txt
```

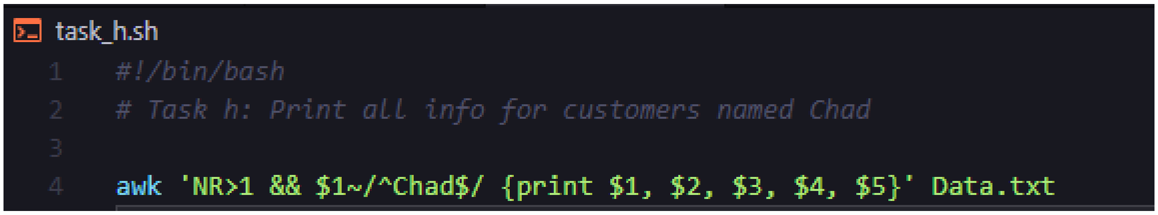
**Note: END means After completing all the lines.**



```
root@d04ee18c0a47:/workspace# ./task_g.sh
53900
```

**Output**

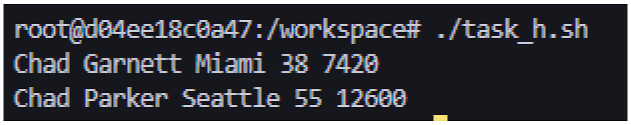
## H) Print all info for customers named Chad:



task_h.sh

```
#!/bin/bash
# Task h: Print all info for customers named Chad

awk 'NR>1 && $1~/^Chad$/ {print $1, $2, $3, $4, $5}' Data.txt
```

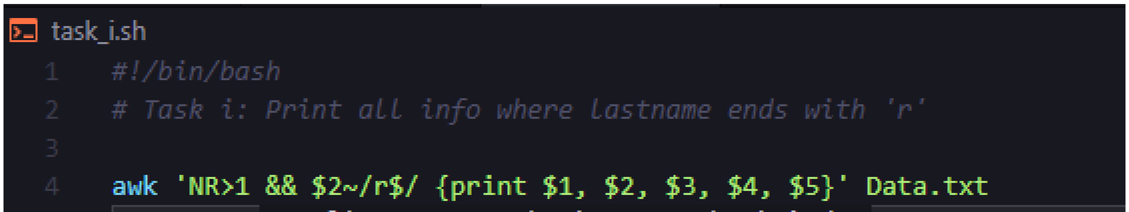
**Note: I used Regex here, ~ means match patterns, ^ means Beginning of text $ means End of text .**



```
root@d04ee18c0a47:/workspace# ./task_h.sh
Chad Garnett Miami 38 7420
Chad Parker Seattle 55 12600
```

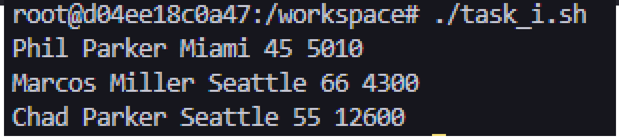
**Output**

## I) Print all info where lastname ends with 'r':



task_i.sh

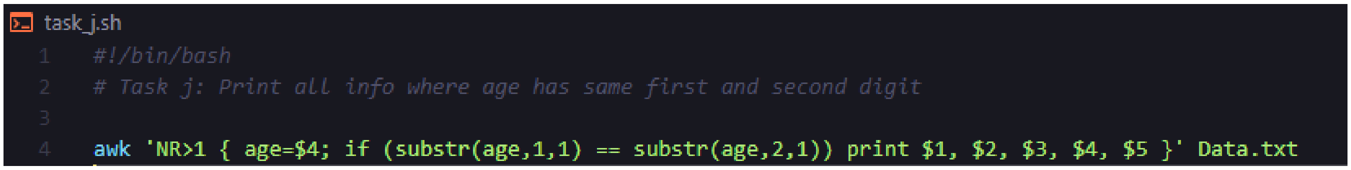
```
#!/bin/bash
# Task i: Print all info where lastname ends with 'r'

awk 'NR>1 && $2~/r$/ {print $1, $2, $3, $4, $5}' Data.txt
```



```
root@d04ee18c0a47:/workspace# ./task_i.sh
Phil Parker Miami 45 5010
Marcos Miller Seattle 66 4300
Chad Parker Seattle 55 12600
```

**Output**

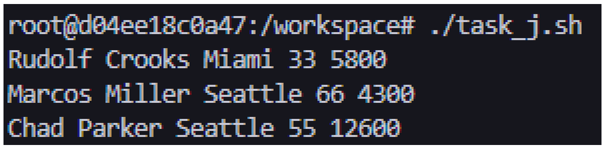
## J) Print all info where age has same first and second digit:



task_j.sh

```
#!/bin/bash
# Task j: Print all info where age has same first and second digit

awk 'NR>1 { age=$4; if (substr(age,1,1) == substr(age,2,1)) print $1, $2, $3, $4, $5 }' Data.txt
```

**Note: substr(string, start, length)**



```
root@d04ee18c0a47:/workspace# ./task_j.sh
Rudolf Crooks Miami 33 5800
Marcos Miller Seattle 66 4300
Chad Parker Seattle 55 12600
```

**Output**

**My GitHub Repo: Dos_Lab2**