



Task 2: **Adding user programs to xv6**

Jana Saleh 900204192
Mariam Dahab 900192441
Muhammad Azzazy 900202821

TABLE OF CONTENTS

01

INTRODUCTION

02

ROLE

03

USER APPS

04

MODIFIED FILES



01

INTRODUCTION



Introducing the lab task

The background is black with glowing cyan lines and squares. On the left, a vertical line of four squares is at the top, and a more complex circuit-like pattern of lines and squares extends downwards. On the right, another vertical line of two squares is at the top, with more circuit-like patterns below. A horizontal cyan line with circular endpoints is positioned below the title.

INTRODUCTION

We added three user programs to the xv6 operating system (OS) each of which implements the following:

- Linear search
- Bubble sort
- Print statistics



02

ROLES

The role of every team member



ROLES

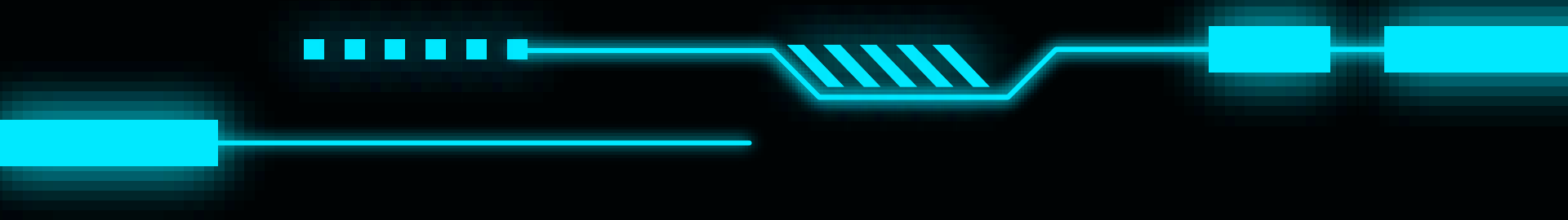
Jana Saleh	Implemented the last user program which printed the statistics of a list of floating-point numbers and modified the make file to incorporate the functionality.
Mariam Dahab	Implemented the second user program which sorted a given list using the bubble sort algorithm and modified the make file to incorporate the functionality.
Muhammad Azzazy	Implemented the first user program which searched for a given key in a given list and returned the index of the value in the list which corresponds to the key and modified the make file to incorporate the functionality.



03

PSEUDOCODE

Description of the added apps and
pseudocode



LINEAR SEARCH



```
LINEARSEARCH( $A, k$ )  
   $flag \leftarrow \text{false}$   
  for  $i \leftarrow 1$  to  $\text{length}[A]$   
  do  
    if  $A[i] == k$   
      then  $index \leftarrow i$   
       $flag \leftarrow \text{true}$ 
```


BUBBLE SORT



BUBBLESORT(A)

for $i \leftarrow 1$ **to** $\text{length}[A]-1$

do for $j \leftarrow 1$ **to** $\text{length}[A]-1$

do if $A[j] < A[j+1]$

then swap $A[j] \leftrightarrow A[j+1]$

PRINT STATISTICS



```
PRINTSTATS(A)
  for i ← 1 to length[A]-1
    do for j ← 1 to length[A]-1
      do swap A[j] ↔ A[j+1]

  sum ← 0
  for i ← 1 to length[A]
    do sum ← sum + A[i]

  for i ← 1 to length[A]
    do if A[i] > max
      then max ← A[i]
    if A[i] < min
      then min ← A[i]
  average ← sum/length[A]
  square_of_mean ← average^2
  var ← (sum_of_squares / length[A]) - square_of_mean
  std ← sqrt(var)

  if length[A] mod 2 == 0
    then median ← (A[length[A]] + A[length[A]+1]) / 2
  else
    pos ← ⌈length[A] / 2⌉
    median ← A[pos]
```



04

MODIFICATIONS



Modified files & reasons for modification



MAKEFILE

The makefile was modified by changing both the variable UPROGS and EXTRAS to include the three programs that we defined:

- linear_search
- bubble_sort
- print_stats

This was done to guarantee that the three C files are compiled and linked to form executables to be included in our version of the xv6 OS.

Another modification to the makefile involved adding the flag “-lm” when compiling the program print_stats since print_stats is using the math library and this library requires the aforementioned flag for successful linking.

The last modification involved adding the compiler flag “-lc” to successfully link to the errno library which is used by the square root function from the math library.

THANKS!



Do you have any questions?

janasaleh@aucegypt.edu

mhdahab@aucegypt.edu

muhammad-azzazy@aucegypt.edu

Credits: This presentation template was created by
Slidesgo, including icons by **Flaticon**, and
infographics & images by **Freepik**

Please keep this slide for attribution