**Lab Exercise – 5**

* AIM ::

WAP in shell script to implement CPU scheduling for first come first serve.

Source\_Code ::

### echo $'\n' "5C6 - Amit Singhal (11614802722)" $'\n'

### read -p "Enter the number of processes: " num\_processes

### # Collect process details

### for ((i=0;i<num\_processes;i++)); do

### echo ""

### read -p "Enter the arrival time for process $((i+1)): " arrival\_time

### read -p "Enter the burst time for process $((i+1)): " burst\_time

### processes[$i]="$arrival\_time $burst\_time"

### done

### # Sort processes by arrival time

### IFS=$'\n' sorted\_processes=($(sort -n -k1 <<<"${processes[\*]}"))

### unset IFS

### # Initialize variables

### total\_completion\_time=0

### total\_waiting\_time=0

### total\_turnaround\_time=0

### # Display table header

### echo -e "\nProcess\t Burst Time\tArrival Time\tWaiting Time\t Turnaround Time

### \tCompletion Time"

### # Process all processes

### for ((i=0;i<num\_processes;i++)); do

### current\_process=(${sorted\_processes[$i]})

### current\_arrival\_time=${current\_process[0]}

### current\_burst\_time=${current\_process[1]}

### # Calculate waiting time

### if (( i == 0 )); then

### waiting\_time=0

### else

### waiting\_time=$((total\_completion\_time - current\_arrival\_time))

### if ((waiting\_time < 0)); then

### waiting\_time=0

### fi

### fi

### # Calculate completion time and turnaround time

### completion\_time=$((total\_completion\_time + current\_burst\_time))

### turnaround\_time=$((completion\_time - current\_arrival\_time))

### # Update total values

### total\_completion\_time=$completion\_time

### total\_waiting\_time=$((total\_waiting\_time + waiting\_time))

### total\_turnaround\_time=$((total\_turnaround\_time + turnaround\_time))

### # Display process details

### echo -e "P$((i+1))\t $current\_burst\_time\t\t$current\_arrival\_time

### \t\t$waiting\_time\t\t $turnaround\_time\t\t \t$completion\_time"

### done

### # Calculate averages

### avg\_waiting\_time=$(awk "BEGIN {printf \"%.2f\", $total\_waiting\_time/$num\_processes}")

### avg\_turnaround\_time=$(awk "BEGIN {printf \"%.2f\", $total\_turnaround\_time/$num\_processes}")

### # Display averages

### echo ""

### echo "Avg waiting time: $avg\_waiting\_time"

### echo "Avg turnaround time: $avg\_turnaround\_time"

### 

Output ::