#include <stdio.h>

void min\_arrival(int [], int [], int [], int);

void bubble\_sort(int [], int [], int[], int);

void swap(int\*, int\*);

int main(){

int n\_proc, i;

float wait\_sum = 0, turn\_sum = 0;

printf("Enter number of processes: ");

scanf("%d", &n\_proc);

int burst\_time[n\_proc], processes[n\_proc], arrival\_time[n\_proc], waiting\_time[n\_proc] = {0}, turnaround\_time[n\_proc];

for(i = 0; i < n\_proc; i++){

printf("Enter the arrival time and burst time of process p(%d): ", i + 1);

scanf("%d %d", &arrival\_time[i], &burst\_time[i]);

processes[i] = i + 1;

}

min\_arrival(arrival\_time, burst\_time, processes, n\_proc);

bubble\_sort(burst\_time, arrival\_time, processes, n\_proc);

for(i = 0; i < n\_proc; i++){

waiting\_time[i + 1] += (burst\_time[i] + waiting\_time[i]);

waiting\_time[i] -= arrival\_time[i];

}

for(i = 0; i < n\_proc; i++){

turnaround\_time[i] = (waiting\_time[i] + burst\_time[i]);

}

for(i = 0; i < n\_proc; i++){

wait\_sum += waiting\_time[i];

turn\_sum += turnaround\_time[i];

}

arrival\_time[0] = 0;

printf("Process no.\tArrival time\tBurst time\tWaiting time\tTurnaround time\n");

for(i = 0; i < n\_proc; i++){

printf("\tp(%d)\t\t%d\t\t%d\t\t%d\t\t%d\n", processes[i], arrival\_time[i], burst\_time[i], waiting\_time[i], turnaround\_time[i]);

}

printf("\nAverage Waiting time: %2.2f ms\nAverage Turnaround time: %2.2f ms\n\n", (wait\_sum/n\_proc), turn\_sum/n\_proc);

}

void min\_arrival(int at[], int bt[], int p[], int n){

int min = at[0], j;

for(int i = 1; i < n; i++){

if(min > at[i]){

min = at[i];

j = i;

}

}

swap(&at[j], &at[0]);

swap(&bt[j], &bt[0]);

swap(&p[j], &p[0]);

}

void bubble\_sort(int bt[], int at[], int p[], int n){

for(int i = 0; i < n; i++){

for(int j = 1; j < n - i - 1; j++){

if(bt[j] > bt[j + 1]){

swap(&bt[j], &bt[j + 1]);

swap(&at[j], &at[j + 1]);

swap(&p[j], &p[j + 1]);

}

}

}

}

void swap(int \*a, int \*b){

int temp = \*b;

\*b = \*a;

\*a = temp;

}