Week 5

#include <stdio.h>

#define MAX 5

void wait(int \*s) {

while (\*s <= 0);

(\*s)--;

}

void signal(int \*s) {

(\*s)++;

}

int main() {

int total\_philosophers, num\_hungry, choice;

int hungry[MAX] = {0};

int positions[MAX];

int room;

int i;

printf("Enter the total number of philosophers: ");

scanf("%d", &total\_philosophers);

printf("How many are hungry: ");

scanf("%d", &num\_hungry);

for (i = 0; i < num\_hungry; i++) {

printf("Enter philosopher %d position (1 to %d): ", i + 1, total\_philosophers);

scanf("%d", &positions[i]);

hungry[positions[i] - 1] = 1;

}

do {

printf("\n1. One can eat at a time\n");

printf("2. Two can eat at a time\n");

printf("3. Exit\n");

printf("Enter your choice: ");

scanf("%d", &choice);

if (choice == 1 || choice == 2) {

room = choice;

int done = 0;

while (done < num\_hungry) {

for (i = 0; i < num\_hungry; i++) {

int pos = positions[i] - 1;

if (hungry[pos]) {

printf("P %d is waiting\n", positions[i]);

}

}

int count = 0;

for (i = 0; i < num\_hungry && count < choice; i++) {

int pos = positions[i] - 1;

if (hungry[pos]) {

wait(&room);

printf("P %d is granted to eat\n", positions[i]);

printf("P %d has finished eating\n", positions[i]);

hungry[pos] = 0;

signal(&room);

done++;

count++;

}

}

}

} else if (choice != 3) {

printf("Invalid choice!\n");

}

} while (choice != 3);

return 0;

}

