PROGRAMMING AND PROBLEM SOLVING ACTIVITY

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Problem Statement:
Queue Implementation :
Tom, Sam, Jack, Bond, Jose planned to watch movie. Sam needs 3 tickets he reached the theater 10 minutes before the show. Tom needs 5 tickets he reached 15 minutes before the show. Jack needs 4 tickets he reached 13 minutes before the show. Bond and Jose need 2 tickets each. They both arrived at the same time i.e. 16 minutes before the show. Find out the order in which they got the tickets. Assume only these 5 people came for booking tickets. Find out waiting time taken by each of them.

CODE:

```
#include <stdio.h>
#include <string.h>
int main() {
   char names[5][50];
   int tickets[5];
   int arrivalTimes[5];
   int waitingTime[5] = {0, 0, 0, 0, 0};
   // Taking input from the user
   printf("Enter the details for each person:\n");
   for (int i = 0; i < 5; i++) {
      printf("Person %d:\n", i + 1);
      printf("Name: ");
      scanf("%49[^\n]%*c", names[i]);  // Use
%[^\n]%*c to read a whole line with spaces
      printf("Number of tickets: ");
      scanf("%d%*c", &tickets[i]);  // %*c is used to
consume the newline character
      printf("Arrival time: ");
      scanf("%d%*c", &arrivalTimes[i])
```

```
}
 // Calculate the order in which tickets are
obtained
   for (int i = 0; i < 5; i++) {
      for (int j = i + 1; j < 5; j++) {
         if (arrivalTimes[i] > arrivalTimes[j]) {
            int temp = arrivalTimes[i];
            arrivalTimes[i] = arrivalTimes[j];
            arrivalTimes[j] = temp;
            temp = tickets[i];
            tickets[i] = tickets[j];
            tickets[j] = temp;
           char tempName[50];
            strcpy(tempName, names[i]);
            strcpy(names[i], names[j]);
            strcpy(names[j], tempName);
         }
      }
   }
   // Calculate the waiting time for each person
```

```
    for (int i = 0; i < 5; i++) {
        for (int j = 0; j < i; j++) {
            waitingTime[i] += tickets[j];
        }
    }
// Display the order of ticket obtained and waiting time for each person
    for (int i = 0; i < 5; i++) {
        printf("Person %d (%s): Tickets obtained: %d, Waiting time: %d minutes\n", i + 1, names[i], tickets[i], waitingTime[i]);
    }
  return 0;
}
```

INPUT:

```
Enter the details for each person:
Person 1:
Name: sam
Number of tickets: 3
Arrived ahead of: 10
Person 2:
Name: tom
Number of tickets: 5
Arrived ahead of: 15
Person 3:
Name: jack
Number of tickets: 4
Arrived ahead of: 13
Person 4:
Name: bond
Number of tickets: 2
Arrived ahead of: 16
Person 5:
Name: jose
Number of tickets: 2
Arrived ahead of: 16
```

OUTPUT:

```
Person 1 (sam): Tickets obtained: 3, Waiting time: 0 minutes
Person 2 (jack): Tickets obtained: 4, Waiting time: 3 minutes
Person 3 (tom): Tickets obtained: 5, Waiting time: 7 minutes
Person 4 (bond): Tickets obtained: 2, Waiting time: 12 minutes
Person 5 (jose): Tickets obtained: 2, Waiting time: 14 minutes
```