Terminal output (top window):

```
                        Plane 22 ready to take off.
                        plane 22 told to try later.
18: Plane 20 landed in queue 2 units

Queue is empty.
19: Plane 0 took off in queue 19 units

                        Plane 23 ready to land.
20: Plane 23 landed in queue 0 units

                        Plane 24 ready to land.

                        Plane 25 ready to land.

                        Plane 26 ready to take off.
                        plane 26 told to try later.
21: Plane 24 landed in queue 0 units
22: Plane 25 landed in queue 1 units

                        Plane 27 ready to land.
23: Plane 27 landed in queue 0 units

Queue is empty.
24: Plane 0 took off in queue 24 units

Queue is empty.
25: Plane 0 took off in queue 25 units

                        Plane 28 ready to take off.
                        plane 28 told to try later.

Queue is empty.
26: Plane 0 took off in queue 26 units

                        Plane 29 ready to land.
27: Plane 29 landed in queue 0 units

                        Plane 30 ready to take off.
                        plane 30 told to try later.

                        Plane 31 ready to take off.
                        plane 31 told to try later.

Queue is empty.
28: Plane 0 took off in queue 28 units
```

Terminal output (bottom window):

```
21: Plane 24 landed in queue 0 units
22: Plane 25 landed in queue 1 units

                        Plane 27 ready to land.
23: Plane 27 landed in queue 0 units

Queue is empty.
24: Plane 0 took off in queue 24 units

Queue is empty.
25: Plane 0 took off in queue 25 units

                        Plane 28 ready to take off.
                        plane 28 told to try later.

Queue is empty.
26: Plane 0 took off in queue 26 units

                        Plane 29 ready to land.
27: Plane 29 landed in queue 0 units

                        Plane 30 ready to take off.
                        plane 30 told to try later.

                        Plane 31 ready to take off.
                        plane 31 told to try later.

Queue is empty.
28: Plane 0 took off in queue 28 units

Queue is empty.
29: Plane 0 took off in queue 29 units

Queue is empty.
30: Plane 0 took off in queue 30 units
                        Simulation has concluded after 30 units.
                        Total number of planes processed: 31
                        Number of planes landed: 17
                        Number of planes taken off: 13
                        Number of planes refused use: 9
                        Number left ready to land: 0
                        Number left ready to take off: 5
                        Percentage of time runway idle: 0.000000
                        Average wait time to land: 0.411765
                        Average wait time to take off: 16.846154
PS C:\Users\Admin\Desktop\p1>
```

File Edit Selection View Go Run Terminal Help

EXPLORER

∨ P1
  C client.c
  □ client.o
  🗎 client.zip
  ⬚ p1.exe
  ♥ p1.mk
  🗎 p1.zip
  C server.c
  h server.h
  □ server.h.gch
  □ server.o
  🗎 server.zip

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL

```
PS C:\Users\Admin\Desktop\p1> make -f  p1.mk
gcc -c server.c server.h
PS C:\Users\Admin\Desktop\p1> .\p1
1
Program that simulates an airport with only one runway.
One plane can land or depart in each unit of time.
Up to 5 planes can be waiting to land or take off at any time.
How many units of time will the simulation run?30

Expected number of arrivals per unit time? 0.47

Expected number of departures per unit time? 0.47
1:      Runway is idle.
2:      Runway is idle.

        Plane 1 ready to land.
3:Plane 1 landed in queue 0 units

        Plane 2 ready to take off.

        Queue is empty.
4:Plane 0 took off in queue 4 units

        Plane 3 ready to land.

        Plane 4 ready to take off.

        Plane 5 ready to take off.
5:Plane 3 landed in queue 0 units

        Plane 6 ready to take off.

        Plane 7 ready to take off.

        Queue is empty.
6:Plane 0 took off in queue 6 units

        Queue is empty.
7:Plane 0 took off in queue 7 units

        Plane 8 ready to land.
8:Plane 8 landed in queue 0 units

        Queue is empty.
9:Plane 0 took off in queue 9 units
```

> OUTLINE
> TIMELINE

⊗ 0 ⚠ 0   Ln 1, Col 1   Spaces: 4   UTF-8   CRLF   C   Go Live   Win32

1: powershell

File Edit Selection View Go Run Terminal Help

EXPLORER

∨ P1
  C client.c
  □ client.o
  🗎 client.zip
  ⬚ p1.exe
  ♥ p1.mk
  🗎 p1.zip
  C server.c
  h server.h
  □ server.h.gch
  □ server.o
  🗎 server.zip

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL

```
9:Plane 0 took off in queue 9 units

        Plane 9 ready to land.
10:Plane 9 landed in queue 0 units

        Plane 10 ready to land.
11:Plane 10 landed in queue 0 units

        Plane 11 ready to take off.
        plane 11 told to try later.

        Queue is empty.
12:Plane 0 took off in queue 12 units

        Plane 12 ready to land.

        Plane 13 ready to take off.
        plane 13 told to try later.

        Plane 14 ready to take off.
        plane 14 told to try later.
13:Plane 12 landed in queue 0 units

        Queue is empty.
14:Plane 0 took off in queue 14 units

        Queue is empty.
15:Plane 0 took off in queue 15 units

        Plane 15 ready to take off.
        plane 15 told to try later.

        Queue is empty.
16:Plane 0 took off in queue 16 units

        Queue is empty.
17:Plane 0 took off in queue 17 units

        Queue is empty.
18:Plane 0 took off in queue 18 units

        Queue is empty.
19:Plane 0 took off in queue 19 units

        Plane 16 ready to land.
```

> OUTLINE
> TIMELINE

⊗ 0 ⚠ 0   Ln 1, Col 1   Spaces: 4   UTF-8   CRLF   C   Go Live   Win32

1: powershell

```
                Plane 16 ready to land.
                Plane 17 ready to land.
20:Plane 16 landed in queue 0 units

                Plane 18 ready to take off.
                plane 18 told to try later.

                Plane 19 ready to take off.
                plane 19 told to try later.
21:Plane 17 landed in queue 1 units

                Plane 20 ready to take off.
                plane 20 told to try later.

                Queue is empty.
22:Plane 0 took off in queue 22 units

                Queue is empty.
23:Plane 0 took off in queue 23 units

                Plane 21 ready to land.
24:Plane 21 landed in queue 0 units

                Plane 22 ready to take off.
                plane 22 told to try later.

                Queue is empty.
25:Plane 0 took off in queue 25 units

                Plane 23 ready to take off.
                plane 23 told to try later.

                Queue is empty.
26:Plane 0 took off in queue 26 units

                Plane 24 ready to take off.
                plane 24 told to try later.

                Queue is empty.
27:Plane 0 took off in queue 27 units

                Queue is empty.
28:Plane 0 took off in queue 28 units
```
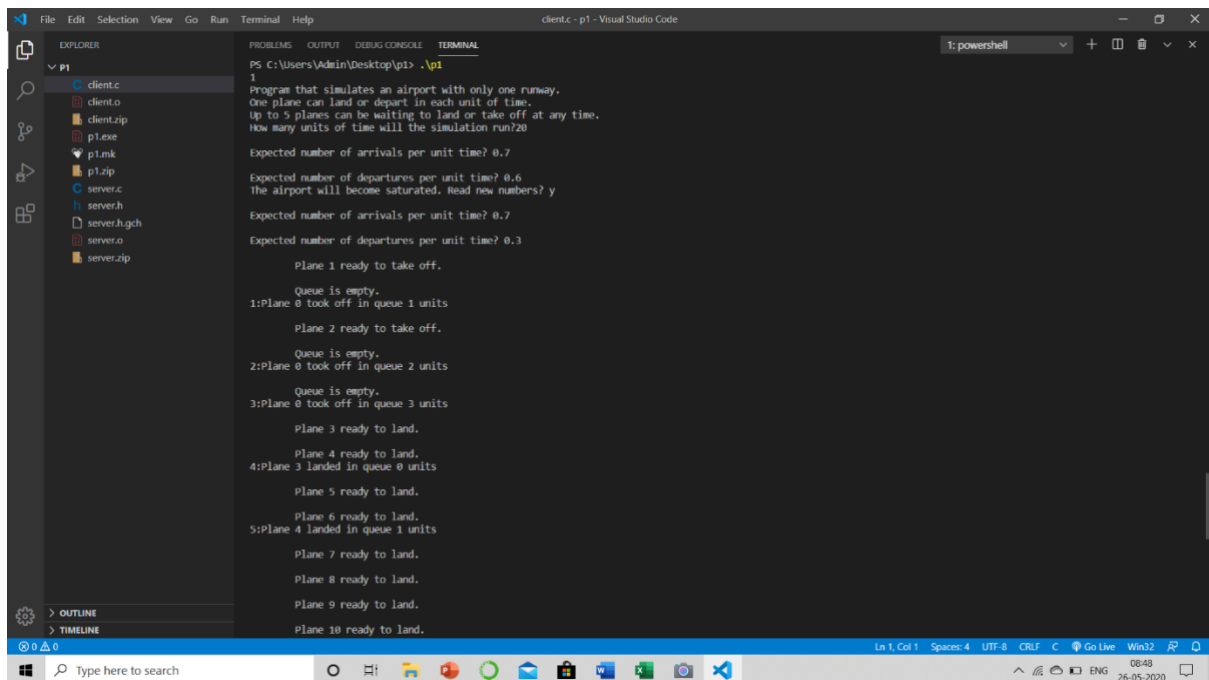
```
                Queue is empty.
23:Plane 0 took off in queue 23 units

                Plane 21 ready to land.
24:Plane 21 landed in queue 0 units

                Plane 22 ready to take off.
                plane 22 told to try later.

                Queue is empty.
25:Plane 0 took off in queue 25 units

                Plane 23 ready to take off.
                plane 23 told to try later.

                Queue is empty.
26:Plane 0 took off in queue 26 units

                Plane 24 ready to take off.
                plane 24 told to try later.

                Queue is empty.
27:Plane 0 took off in queue 27 units

                Queue is empty.
28:Plane 0 took off in queue 28 units

                Plane 25 ready to take off.
                plane 25 told to try later.

                Queue is empty.
29:Plane 0 took off in queue 29 units

                Plane 26 ready to land.
30:Plane 26 landed in queue 0 units
                Simulation has concluded after 30 units.
                Total number of planes processed: 26
                Number of planes landed: 10
                Number of planes taken off: 18
                Number of planes refused use: 11
                Number left ready to land: 0
                Number left ready to take off: 5
                Percentage of time runway idle: 6.666667
                Average wait time to land: 0.100000
                Average wait time to take off: 17.611111
PS C:\Users\Admin\Desktop\p1>
```

when sum of expected arrival and departure is >1:

```
            Plane 10 ready to land.
            plane  10 directed to another airport.
6:Plane 5 landed in queue 1 units

            Plane 11 ready to land.

            Plane 12 ready to land.
            plane  12 directed to another airport.

            Plane 13 ready to land.
            plane  13 directed to another airport.

            Plane 14 ready to land.
            plane  14 directed to another airport.
7:Plane 6 landed in queue 2 units

            Plane 15 ready to land.
8:Plane 7 landed in queue 2 units

            Plane 16 ready to take off.
9:Plane 8 landed in queue 3 units
10:Plane 9 landed in queue 4 units

            Plane 17 ready to land.

            Plane 18 ready to land.
11:Plane 11 landed in queue 4 units

            Plane 19 ready to land.
12:Plane 15 landed in queue 4 units
13:Plane 17 landed in queue 2 units

            Plane 20 ready to land.

            Plane 21 ready to land.
14:Plane 18 landed in queue 3 units

            Plane 22 ready to land.

            Plane 23 ready to land.
15:Plane 19 landed in queue 3 units

            Plane 24 ready to land.
16:Plane 20 landed in queue 2 units
17:Plane 21 landed in queue 3 units
```

```
            Plane 17 ready to land.

            Plane 18 ready to land.
11:Plane 11 landed in queue 4 units

            Plane 19 ready to land.
12:Plane 15 landed in queue 4 units
13:Plane 17 landed in queue 2 units

            Plane 20 ready to land.

            Plane 21 ready to land.
14:Plane 18 landed in queue 3 units

            Plane 22 ready to land.

            Plane 23 ready to land.
15:Plane 19 landed in queue 3 units

            Plane 24 ready to land.
16:Plane 20 landed in queue 2 units
17:Plane 21 landed in queue 3 units

            Plane 25 ready to land.

            Plane 26 ready to take off.
18:Plane 22 landed in queue 3 units

            Plane 27 ready to land.

            Plane 28 ready to land.
19:Plane 23 landed in queue 4 units

            Plane 29 ready to land.
20:Plane 24 landed in queue 4 units
            Simulation has concluded after 20 units.
            Total number of planes processed: 29
            Number of planes landed: 17
            Number of planes taken off: 3
            Number of planes refused use: 4
            Number left ready to land: 4
            Number left ready to take off: 4
            Percentage of time runway idle: 0.000000
            Average wait time to land: 2.647059
            Average wait time to take off: 2.000000
PS C:\Users\Admin\Desktop\p1>
```

when expected number of arrivals or expected number of departures per unit time is -ve: