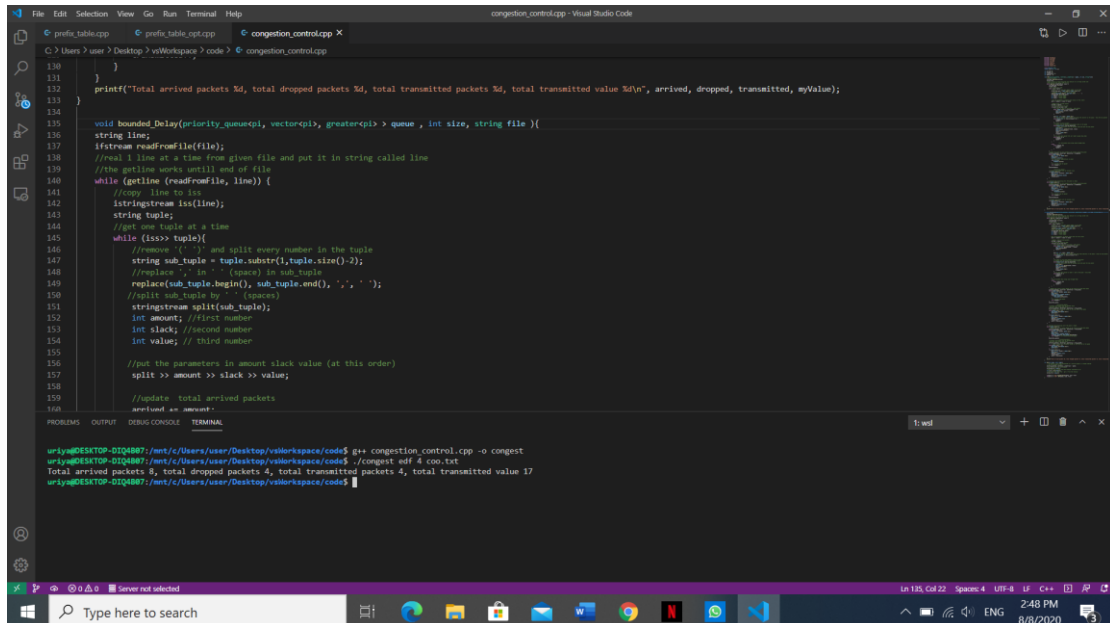
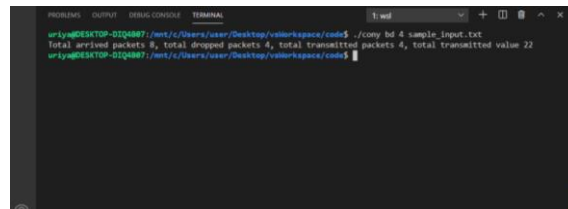


Congestion control running example:



```
130 }
131 }
132 printf("Total arrived packets %d, total dropped packets %d, total transmitted packets %d, total transmitted value %d\n", arrived, dropped, transmitted, myValue);
133 }
134 }
135 void bounded_Delay(priority_queue<tuple<int, int, int>>, vector<tuple<int, int, int>>, greater<tuple<int, int, int>>> > queue, int size, string file){
136 string line;
137 ifstream readFromFile(file);
138 //read 1 line at a time from given file and put it in string called line
139 //the getline works until end of file
140 while (getline (readFromFile, line)) {
141 //copy line to is
142 stringstream iss(line);
143 string tuple;
144 //get one tuple at a time
145 while (iss >> tuple){
146 //remove '(' ')' and split every number in the tuple
147 string sub_tuple = tuple.substr(1, tuple.size()-2);
148 //replace ' ' in ' ' (spaces) in sub_tuple
149 replace(sub_tuple.begin(), sub_tuple.end(), ' ', ',');
150 //split sub_tuple by ' ' (spaces)
151 stringstream split(sub_tuple);
152 int amount; //first number
153 int slack; //second number
154 int value; // third number
155 //put the parameters in amount slack value (at this order)
156 split >> amount >> slack >> value;
157 //update total arrived packets
158 arrived ++ amount;
159 }
```

```
urlyangDESKTOP-DIQ4887 /mnt/c/Users/user/Desktop/vsworkspace/code$ g++ congestion_control.cpp -o congest
urlyangDESKTOP-DIQ4887 /mnt/c/Users/user/Desktop/vsworkspace/code$ ./congest edf 4 coo.txt
Total arrived packets 8, total dropped packets 4, total transmitted packets 4, total transmitted value 17
urlyangDESKTOP-DIQ4887 /mnt/c/Users/user/Desktop/vsworkspace/code$
```



```
urlyangDESKTOP-DIQ4887 /mnt/c/Users/user/Desktop/vsworkspace/code$ ./congest edf 4 sample_input.txt
Total arrived packets 8, total dropped packets 4, total transmitted packets 4, total transmitted value 22
urlyangDESKTOP-DIQ4887 /mnt/c/Users/user/Desktop/vsworkspace/code$
```

Running examples for theoretical questions:

Example for a:

aExample - Notepad
File Edit Format View Help
(3,5,3) (2,3,3)
(1,6,3)(3,2,3)
(7,10,3)



```
urlyangDESKTOP-DIQ4887 /mnt/c/Users/user/Desktop/vsworkspace/code$ cd code
urlyangDESKTOP-DIQ4887 /mnt/c/Users/user/Desktop/vsworkspace/code$ ./congest edf 4 aExample.txt
Total arrived packets 13, total dropped packets 7, total transmitted packets 6, total transmitted value 18
urlyangDESKTOP-DIQ4887 /mnt/c/Users/user/Desktop/vsworkspace/code$ ./congest edf 4 aExample.txt
Total arrived packets 13, total dropped packets 9, total transmitted packets 4, total transmitted value 12
urlyangDESKTOP-DIQ4887 /mnt/c/Users/user/Desktop/vsworkspace/code$ ./congest edf 6 aExample.txt
Total arrived packets 13, total dropped packets 5, total transmitted packets 8, total transmitted value 24
urlyangDESKTOP-DIQ4887 /mnt/c/Users/user/Desktop/vsworkspace/code$ ./congest edf 6 aExample.txt
Total arrived packets 13, total dropped packets 9, total transmitted packets 4, total transmitted value 12
urlyangDESKTOP-DIQ4887 /mnt/c/Users/user/Desktop/vsworkspace/code$
```

Example for b:

```
bExample - Notepad
File Edit Format View Help
|3,3,3) (2,3,8)
(1,3,10)(3,3,1)
(7,3,2)
(4,3,6)
(2,3,5)
```

כמו שניתן לראות גם אם מגדילים את המחסנית bd יותר יעיל מdf.

```
urly@DESKTOP-01Q4887:/mnt/c/Users/user/Desktop/workspace/code$ ./con edf 4 bExample.txt
Total arrived packets 19, total dropped packets 13, total transmitted packets 6, total transmitted value 25
urly@DESKTOP-01Q4887:/mnt/c/Users/user/Desktop/workspace/code$ ./con bd 4 bExample.txt
Total arrived packets 19, total dropped packets 13, total transmitted packets 6, total transmitted value 37
urly@DESKTOP-01Q4887:/mnt/c/Users/user/Desktop/workspace/code$ ./con edf 8 bExample.txt
Total arrived packets 19, total dropped packets 13, total transmitted packets 6, total transmitted value 29
urly@DESKTOP-01Q4887:/mnt/c/Users/user/Desktop/workspace/code$ ./con bd 8 bExample.txt
Total arrived packets 19, total dropped packets 13, total transmitted packets 6, total transmitted value 37
```

Example for c:

```
c1Example - Notepad
File Edit Format View Help
|3,6,3) (2,8,8)
(1,5,10)(3,21,1)
(7,3,12)
(4,12,6)
```

תור קטן, slack גבוה ניתן לראות כי bd עדיף

```
urly@DESKTOP-01Q4887:/mnt/c/Users/user/Desktop/workspace/code$ ./con bd 2 c1Example.txt
Total arrived packets 17, total dropped packets 12, total transmitted packets 5, total transmitted value 48
urly@DESKTOP-01Q4887:/mnt/c/Users/user/Desktop/workspace/code$ ./con edf 2 c1Example.txt
Total arrived packets 17, total dropped packets 12, total transmitted packets 5, total transmitted value 42
urly@DESKTOP-01Q4887:/mnt/c/Users/user/Desktop/workspace/code$ ./con bd 3 c1Example.txt
Total arrived packets 17, total dropped packets 12, total transmitted packets 5, total transmitted value 48
urly@DESKTOP-01Q4887:/mnt/c/Users/user/Desktop/workspace/code$ ./con edf 3 c1Example.txt
Total arrived packets 17, total dropped packets 12, total transmitted packets 5, total transmitted value 43
urly@DESKTOP-01Q4887:/mnt/c/Users/user/Desktop/workspace/code$
```

אולם אם התור גדול edf עדיף.

```
urly@DESKTOP-01Q4887:/mnt/c/Users/user/Desktop/workspace/code$ ./con edf 10 c1Example.txt
Total arrived packets 17, total dropped packets 6, total transmitted packets 11, total transmitted value 73
urly@DESKTOP-01Q4887:/mnt/c/Users/user/Desktop/workspace/code$ ./con bd 10 c1Example.txt
Total arrived packets 17, total dropped packets 9, total transmitted packets 8, total transmitted value 68
urly@DESKTOP-01Q4887:/mnt/c/Users/user/Desktop/workspace/code$
```

*** ישנם כמובן מקרים בהם אם התור גדול יותר מסך החבילות או אפילו קצת פחות – Bd יהיה עדיף , הכול תלוי בvalues שיינתן.

```
c2Example - Notepad
File Edit Format View Help
|3,5,3) (2,3,8)
(3,4,10) (3,2,1)
(6,3,10) (2,2,6)
(8,2,7) (6,5,3)
```

תור קטן , slack נמוך:

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
urly@DESKTOP-01Q4887:/mnt/c/Users/user/Desktop/workspace/code$ ./con edf 4 c2Example.txt
Total arrived packets 33, total dropped packets 29, total transmitted packets 4, total transmitted value 17
urly@DESKTOP-01Q4887:/mnt/c/Users/user/Desktop/workspace/code$ ./con bd 4 c2Example.txt
Total arrived packets 33, total dropped packets 29, total transmitted packets 4, total transmitted value 38
urly@DESKTOP-01Q4887:/mnt/c/Users/user/Desktop/workspace/code$ ./con edf 2 c2Example.txt
Total arrived packets 33, total dropped packets 29, total transmitted packets 4, total transmitted value 23
urly@DESKTOP-01Q4887:/mnt/c/Users/user/Desktop/workspace/code$ ./con bd 2 c2Example.txt
Total arrived packets 33, total dropped packets 29, total transmitted packets 4, total transmitted value 38
urly@DESKTOP-01Q4887:/mnt/c/Users/user/Desktop/workspace/code$ ./con edf 6 c2Example.txt
Total arrived packets 33, total dropped packets 29, total transmitted packets 4, total transmitted value 17
urly@DESKTOP-01Q4887:/mnt/c/Users/user/Desktop/workspace/code$ ./con bd 6 c2Example.txt
Total arrived packets 33, total dropped packets 29, total transmitted packets 4, total transmitted value 38
urly@DESKTOP-01Q4887:/mnt/c/Users/user/Desktop/workspace/code$
```

תור גדול slack נמוך:

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
urly@DESKTOP-01Q4887:/mnt/c/Users/user/Desktop/workspace/code$ ./con bd 20 c2Example.txt
Total arrived packets 33, total dropped packets 29, total transmitted packets 4, total transmitted value 38
urly@DESKTOP-01Q4887:/mnt/c/Users/user/Desktop/workspace/code$ ./con edf 20 c2Example.txt
Total arrived packets 33, total dropped packets 29, total transmitted packets 4, total transmitted value 18
urly@DESKTOP-01Q4887:/mnt/c/Users/user/Desktop/workspace/code$ ./con edf 10 c2Example.txt
Total arrived packets 33, total dropped packets 29, total transmitted packets 4, total transmitted value 15
urly@DESKTOP-01Q4887:/mnt/c/Users/user/Desktop/workspace/code$ ./con bd 10 c2Example.txt
Total arrived packets 33, total dropped packets 29, total transmitted packets 4, total transmitted value 38
urly@DESKTOP-01Q4887:/mnt/c/Users/user/Desktop/workspace/code$
```