

بنام خدا



درس آزمایشگاه شبکه‌های کامپیوتری

آزمایش ۶

تهیه‌کنندگان:

الناز رضایی ۹۸۴۱۱۳۸۷

حوریه سبزواری ۹۸۴۱۲۰۰۴

الف) رقابت جریانهای UDP با یکدیگر

سوال ۱:

سناریوی اول)

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"host: h3"
-
220.2s - received: 3399/ sent: 3399 pkts (loss 0.000%), 1001.3 kbit/s
221.2s - received: 3524/ sent: 3524 pkts (loss 0.000%), 999.4 kbit/s
222.2s - received: 3649/ sent: 3649 pkts (loss 0.000%), 999.6 kbit/s
223.2s - received: 3775/ sent: 3775 pkts (loss 0.000%), 1002.0 kbit/s
224.2s - received: 3900/ sent: 3900 pkts (loss 0.000%), 999.8 kbit/s
225.2s - received: 4025/ sent: 4025 pkts (loss 0.000%), 998.9 kbit/s
226.2s - received: 4151/ sent: 4151 pkts (loss 0.000%), 997.8 kbit/s
227.2s - received: 4277/ sent: 4277 pkts (loss 0.000%), 1003.9 kbit/s
228.2s - received: 4402/ sent: 4402 pkts (loss 0.000%), 996.2 kbit/s
229.2s - received: 4528/ sent: 4528 pkts (loss 0.000%), 1002.9 kbit/s
230.2s - received: 4654/ sent: 4654 pkts (loss 0.000%), 1000.5 kbit/s
231.3s - received: 4779/ sent: 4779 pkts (loss 0.000%), 999.4 kbit/s
232.3s - received: 4904/ sent: 4904 pkts (loss 0.000%), 999.9 kbit/s
233.3s - received: 5030/ sent: 5030 pkts (loss 0.000%), 1001.3 kbit/s
234.3s - received: 5156/ sent: 5156 pkts (loss 0.000%), 999.5 kbit/s
235.3s - received: 5282/ sent: 5282 pkts (loss 0.000%), 999.8 kbit/s
packet received = 5341 / 5341 sent: 0.000% loss

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```

"host: h1"
29.1s - sent: 3643 pkts, 1006.2 kbits/s
30.1s - sent: 3768 pkts, 995.7 kbits/s
31.1s - sent: 3894 pkts, 1004.8 kbits/s
32.2s - sent: 4020 pkts, 998.3 kbits/s
33.2s - sent: 4146 pkts, 1002.6 kbits/s
34.2s - sent: 4271 pkts, 999.9 kbits/s
35.2s - sent: 4396 pkts, 999.9 kbits/s
36.2s - sent: 4522 pkts, 999.8 kbits/s
37.2s - sent: 4647 pkts, 995.1 kbits/s
38.2s - sent: 4773 pkts, 1002.9 kbits/s
39.2s - sent: 4899 pkts, 1004.0 kbits/s
40.2s - sent: 5024 pkts, 998.5 kbits/s
41.2s - sent: 5150 pkts, 1000.4 kbits/s
42.2s - sent: 5276 pkts, 999.2 kbits/s
^Cpackets sent = 5341, avg rate= 999.8kbps

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183.1s - received: 3524/ sent: 3524 pkts (loss 0.000%), 1000.8 kbit/s
184.1s - received: 3649/ sent: 3649 pkts (loss 0.000%), 998.5 kbit/s
185.1s - received: 3774/ sent: 3774 pkts (loss 0.000%), 985.7 kbit/s
186.1s - received: 3902/ sent: 3902 pkts (loss 0.000%), 1017.0 kbit/s
187.1s - received: 4027/ sent: 4027 pkts (loss 0.000%), 999.1 kbit/s
188.1s - received: 4153/ sent: 4153 pkts (loss 0.000%), 1000.5 kbit/s
189.2s - received: 4277/ sent: 4277 pkts (loss 0.000%), 990.3 kbit/s
190.2s - received: 4404/ sent: 4404 pkts (loss 0.000%), 1008.3 kbit/s
191.2s - received: 4523/ sent: 4523 pkts (loss 0.000%), 950.0 kbit/s
192.2s - received: 4655/ sent: 4655 pkts (loss 0.000%), 1050.0 kbit/s
193.2s - received: 4780/ sent: 4780 pkts (loss 0.000%), 997.4 kbit/s
194.2s - received: 4905/ sent: 4905 pkts (loss 0.000%), 999.0 kbit/s
195.2s - received: 5031/ sent: 5031 pkts (loss 0.000%), 1005.0 kbit/s
196.2s - received: 5156/ sent: 5156 pkts (loss 0.000%), 999.6 kbit/s
197.2s - received: 5282/ sent: 5282 pkts (loss 0.000%), 996.0 kbit/s
198.2s - received: 5407/ sent: 5407 pkts (loss 0.000%), 999.8 kbit/s
packet received = 5427 / 5427 sent: 0.000% loss
^C

```

"host: h2"

```
30.2s - sent: 3771 pkts, 1001.7 kbits/s
31.2s - sent: 3896 pkts, 998.8 kbits/s
32.2s - sent: 4022 pkts, 998.8 kbits/s
33.2s - sent: 4148 pkts, 1002.7 kbits/s
34.2s - sent: 4273 pkts, 999.5 kbits/s
35.2s - sent: 4398 pkts, 990.1 kbits/s
36.2s - sent: 4525 pkts, 1009.0 kbits/s
37.2s - sent: 4651 pkts, 1000.7 kbits/s
38.2s - sent: 4777 pkts, 999.3 kbits/s
39.2s - sent: 4903 pkts, 1001.3 kbits/s
40.2s - sent: 5028 pkts, 999.2 kbits/s
41.2s - sent: 5154 pkts, 999.9 kbits/s
42.2s - sent: 5280 pkts, 999.2 kbits/s
43.2s - sent: 5406 pkts, 999.1 kbits/s
^Cpackets sent = 5427, avg rate= 999.8kbps
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سناریوی دوم)

"host: h3"

```
123.7s - received: 13002/ sent: 14353 pkts (loss 9.413%), 907.1 kbit/s
124.7s - received: 13121/ sent: 14483 pkts (loss 9.404%), 941.3 kbit/s
125.8s - received: 13233/ sent: 14627 pkts (loss 9.530%), 895.9 kbit/s
126.8s - received: 13353/ sent: 14755 pkts (loss 9.502%), 959.1 kbit/s
127.8s - received: 13469/ sent: 14878 pkts (loss 9.470%), 926.3 kbit/s
128.8s - received: 13582/ sent: 14999 pkts (loss 9.447%), 898.8 kbit/s
129.8s - received: 13699/ sent: 15122 pkts (loss 9.410%), 928.6 kbit/s
130.8s - received: 13816/ sent: 15248 pkts (loss 9.391%), 933.4 kbit/s
131.8s - received: 13936/ sent: 15383 pkts (loss 9.406%), 949.6 kbit/s
132.8s - received: 14049/ sent: 15511 pkts (loss 9.426%), 897.9 kbit/s
133.8s - received: 14165/ sent: 15630 pkts (loss 9.373%), 927.1 kbit/s
134.8s - received: 14263/ sent: 15735 pkts (loss 9.355%), 782.8 kbit/s
135.8s - received: 14365/ sent: 15843 pkts (loss 9.329%), 811.2 kbit/s
136.8s - received: 14482/ sent: 15974 pkts (loss 9.340%), 928.1 kbit/s
137.8s - received: 14586/ sent: 16102 pkts (loss 9.415%), 827.2 kbit/s
138.8s - received: 14704/ sent: 16246 pkts (loss 9.492%), 935.4 kbit/s
packet received = 14754 / 16300 sent: 9.485% loss
```

"host: h1"

```
116.8s - sent: 14597 pkts, 1000.6 kbits/s
117.8s - sent: 14723 pkts, 1000.5 kbits/s
118.8s - sent: 14848 pkts, 999.5 kbits/s
119.8s - sent: 14974 pkts, 999.1 kbits/s
120.8s - sent: 15100 pkts, 1000.8 kbits/s
121.8s - sent: 15226 pkts, 997.9 kbits/s
122.8s - sent: 15352 pkts, 1002.8 kbits/s
123.8s - sent: 15478 pkts, 1000.4 kbits/s
124.8s - sent: 15604 pkts, 1000.4 kbits/s
125.8s - sent: 15729 pkts, 999.2 kbits/s
126.8s - sent: 15854 pkts, 999.7 kbits/s
127.8s - sent: 15980 pkts, 1000.8 kbits/s
128.8s - sent: 16105 pkts, 993.1 kbits/s
129.8s - sent: 16231 pkts, 1006.5 kbits/s
^Cpackets sent = 16300, avg rate= 977.1kbps
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121.9s - received: 23761/ sent: 27653 pkts (loss 14.074%), 1891.3 kbit/s
122.9s - received: 23995/ sent: 27946 pkts (loss 14.138%), 1870.8 kbit/s
123.9s - received: 24231/ sent: 28206 pkts (loss 14.093%), 1878.7 kbit/s
124.9s - received: 24475/ sent: 28458 pkts (loss 13.996%), 1941.4 kbit/s
125.9s - received: 24708/ sent: 28711 pkts (loss 13.942%), 1854.9 kbit/s
126.9s - received: 24922/ sent: 28940 pkts (loss 13.884%), 1704.6 kbit/s
127.9s - received: 25162/ sent: 29186 pkts (loss 13.787%), 1919.7 kbit/s
128.9s - received: 25395/ sent: 29441 pkts (loss 13.743%), 1855.9 kbit/s
129.9s - received: 25636/ sent: 29715 pkts (loss 13.727%), 1927.6 kbit/s
130.9s - received: 25867/ sent: 29961 pkts (loss 13.664%), 1836.3 kbit/s
132.0s - received: 26095/ sent: 30200 pkts (loss 13.593%), 1819.4 kbit/s
133.0s - received: 26261/ sent: 30378 pkts (loss 13.553%), 1325.0 kbit/s
134.0s - received: 26504/ sent: 30637 pkts (loss 13.490%), 1940.6 kbit/s
135.0s - received: 26721/ sent: 30879 pkts (loss 13.465%), 1729.5 kbit/s
136.0s - received: 26934/ sent: 31182 pkts (loss 13.623%), 1695.7 kbit/s
137.0s - received: 27182/ sent: 31438 pkts (loss 13.538%), 1982.4 kbit/s
packet received = 27458 / 31714 sent: 13.420% loss

```

"host: h2"

```

113.6s - sent: 28390 pkts, 2002.5 kbits/s
114.6s - sent: 28640 pkts, 1991.8 kbits/s
115.6s - sent: 28892 pkts, 2008.4 kbits/s
116.6s - sent: 29142 pkts, 1999.1 kbits/s
117.6s - sent: 29392 pkts, 1998.1 kbits/s
118.6s - sent: 29643 pkts, 2003.4 kbits/s
119.6s - sent: 29894 pkts, 2000.7 kbits/s
120.6s - sent: 30145 pkts, 1998.4 kbits/s
121.6s - sent: 30396 pkts, 2001.0 kbits/s
122.6s - sent: 30646 pkts, 1991.3 kbits/s
123.6s - sent: 30898 pkts, 2010.7 kbits/s
124.6s - sent: 31149 pkts, 2000.0 kbits/s
125.6s - sent: 31399 pkts, 1999.8 kbits/s
126.6s - sent: 31649 pkts, 1999.5 kbits/s

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سناریوی سوم)

"host: h3"

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82.0s - received: 3618/ sent: 8660 pkts (loss 58.222%), 397.5 kbit/s
83.0s - received: 3669/ sent: 8817 pkts (loss 58.387%), 391.1 kbit/s
84.1s - received: 3724/ sent: 8950 pkts (loss 58.391%), 437.5 kbit/s
85.1s - received: 3778/ sent: 9070 pkts (loss 58.346%), 414.2 kbit/s
86.1s - received: 3838/ sent: 9195 pkts (loss 58.260%), 463.6 kbit/s
87.2s - received: 3891/ sent: 9334 pkts (loss 58.314%), 419.5 kbit/s
88.2s - received: 3936/ sent: 9439 pkts (loss 58.301%), 358.8 kbit/s
89.2s - received: 3989/ sent: 9564 pkts (loss 58.292%), 398.5 kbit/s
90.2s - received: 4033/ sent: 9683 pkts (loss 58.350%), 346.1 kbit/s
91.3s - received: 4108/ sent: 9833 pkts (loss 58.222%), 596.7 kbit/s
92.3s - received: 4165/ sent: 9973 pkts (loss 58.237%), 448.6 kbit/s
93.3s - received: 4234/ sent: 10111 pkts (loss 58.125%), 546.5 kbit/s
94.3s - received: 4283/ sent: 10236 pkts (loss 58.157%), 384.7 kbit/s
95.3s - received: 4315/ sent: 10360 pkts (loss 58.349%), 256.0 kbit/s
96.3s - received: 4355/ sent: 10477 pkts (loss 58.433%), 310.8 kbit/s
97.3s - received: 4396/ sent: 10600 pkts (loss 58.528%), 327.9 kbit/s

```

"host: h1"

```
71.4s - sent: 8924 pkts, 1003.2 kbits/s
72.4s - sent: 9049 pkts, 997.8 kbits/s
73.4s - sent: 9175 pkts, 1001.4 kbits/s
74.4s - sent: 9301 pkts, 1000.6 kbits/s
75.4s - sent: 9426 pkts, 998.6 kbits/s
76.4s - sent: 9551 pkts, 997.9 kbits/s
77.4s - sent: 9677 pkts, 1003.9 kbits/s
78.4s - sent: 9803 pkts, 1000.1 kbits/s
79.4s - sent: 9928 pkts, 999.6 kbits/s
80.4s - sent: 10054 pkts, 1001.1 kbits/s
81.4s - sent: 10180 pkts, 999.0 kbits/s
82.4s - sent: 10306 pkts, 999.8 kbits/s
83.4s - sent: 10431 pkts, 999.1 kbits/s
84.4s - sent: 10557 pkts, 1002.4 kbits/s
```

```
81.6s - received: 17138/ sent: 38409 pkts (loss 55.380%), 2452.9 kbit/s
82.6s - received: 17407/ sent: 39027 pkts (loss 55.398%), 2147.6 kbit/s
83.6s - received: 17679/ sent: 39527 pkts (loss 55.274%), 2172.1 kbit/s
84.6s - received: 17964/ sent: 40068 pkts (loss 55.166%), 2267.3 kbit/s
85.6s - received: 18269/ sent: 40686 pkts (loss 55.098%), 2436.7 kbit/s
86.6s - received: 18496/ sent: 41160 pkts (loss 55.063%), 1812.4 kbit/s
87.6s - received: 18783/ sent: 41712 pkts (loss 54.970%), 2295.5 kbit/s
88.6s - received: 19054/ sent: 42214 pkts (loss 54.863%), 2162.2 kbit/s
89.6s - received: 19324/ sent: 42886 pkts (loss 54.941%), 2157.9 kbit/s
90.6s - received: 19620/ sent: 43477 pkts (loss 54.873%), 2365.8 kbit/s
91.6s - received: 19916/ sent: 44105 pkts (loss 54.844%), 2360.2 kbit/s
92.6s - received: 20208/ sent: 44678 pkts (loss 54.770%), 2331.1 kbit/s
93.6s - received: 20524/ sent: 45235 pkts (loss 54.628%), 2512.1 kbit/s
94.6s - received: 20829/ sent: 45788 pkts (loss 54.510%), 2428.4 kbit/s
95.6s - received: 21116/ sent: 46315 pkts (loss 54.408%), 2289.4 kbit/s
96.6s - received: 21411/ sent: 46877 pkts (loss 54.325%), 2358.1 kbit/s
```

"host: h2"

```
70.2s - sent: 39470 pkts, 4595.2 kbits/s
71.2s - sent: 40032 pkts, 4495.7 kbits/s
72.2s - sent: 40596 pkts, 4504.2 kbits/s
73.2s - sent: 41159 pkts, 4501.7 kbits/s
74.2s - sent: 41722 pkts, 4499.1 kbits/s
75.2s - sent: 42284 pkts, 4486.1 kbits/s
76.2s - sent: 42854 pkts, 4558.9 kbits/s
77.2s - sent: 43417 pkts, 4501.7 kbits/s
78.2s - sent: 43980 pkts, 4483.8 kbits/s
79.2s - sent: 44545 pkts, 4517.0 kbits/s
80.2s - sent: 45107 pkts, 4495.8 kbits/s
81.2s - sent: 45671 pkts, 4505.1 kbits/s
82.2s - sent: 46234 pkts, 4499.5 kbits/s
83.2s - sent: 46796 pkts, 4488.2 kbits/s
```

سوال ۲) این مقادیر خیلی نزدیک به مقادیر تحلیلی است اما در عمل ممکن است که اعداد تغییر کنند.

ب) رقابت جریان TCP با جریان های UDP

سناریوی اول)

```
"host: h3"
268.8s - received: 18797/ sent: 20107 pkts (loss 6.515%), 99
1.1 kbit/s
269.8s - received: 18916/ sent: 20226 pkts (loss 6.477%), 94
6.7 kbit/s
270.8s - received: 19056/ sent: 20366 pkts (loss 6.432%), 111
8.7 kbit/s
271.8s - received: 19179/ sent: 20489 pkts (loss 6.394%), 98
1.8 kbit/s
272.8s - received: 19300/ sent: 20611 pkts (loss 6.361%), 96
3.7 kbit/s
packet received = 19333 / 20644 sent: 6.351% loss
^C
```

```
"host: h1"
153.1s - sent: 19133 pkts, 996.3 kbits/s
154.1s - sent: 19259 pkts, 1005.0 kbits/s
155.1s - sent: 19384 pkts, 998.0 kbits/s
156.1s - sent: 19510 pkts, 1000.3 kbits/s
157.1s - sent: 19636 pkts, 1002.8 kbits/s
158.1s - sent: 19762 pkts, 999.5 kbits/s
159.1s - sent: 19887 pkts, 999.4 kbits/s
160.1s - sent: 20013 pkts, 1001.7 kbits/s
161.1s - sent: 20139 pkts, 1000.1 kbits/s
162.1s - sent: 20265 pkts, 988.2 kbits/s
163.1s - sent: 20392 pkts, 1010.0 kbits/s
164.1s - sent: 20518 pkts, 991.2 kbits/s
^Cpackets sent = 20644, avg rate= 979.9kbps
```

```
918.0 kbit/s
260.1s - received: 15888/ sent: 17480 pkts (loss 9.108%),
1100.3 kbit/s
261.1s - received: 16015/ sent: 17607 pkts (loss 9.042%),
1012.3 kbit/s
262.1s - received: 16135/ sent: 17729 pkts (loss 8.991%),
955.5 kbit/s
263.1s - received: 16309/ sent: 17903 pkts (loss 8.904%),
1389.1 kbit/s
packet received = 16345 / 17939 sent: 8.886% loss
```



```

"host: h2"
131.1s - sent: 16387 pkts, 1000.8 kbits/s
132.1s - sent: 16512 pkts, 999.4 kbits/s
133.1s - sent: 16638 pkts, 1001.4 kbits/s
134.1s - sent: 16764 pkts, 999.8 kbits/s
135.1s - sent: 16889 pkts, 999.0 kbits/s
136.1s - sent: 17014 pkts, 999.8 kbits/s
137.1s - sent: 17140 pkts, 999.9 kbits/s
138.1s - sent: 17266 pkts, 1002.3 kbits/s
139.1s - sent: 17391 pkts, 999.5 kbits/s
140.1s - sent: 17516 pkts, 997.5 kbits/s
141.1s - sent: 17642 pkts, 1003.5 kbits/s
142.1s - sent: 17766 pkts, 991.5 kbits/s
143.1s - sent: 17892 pkts, 1003.4 kbits/s
^Cpackets sent = 17939, avg rate= 980.5kbps

226 rtt3487.6ms
119.4: 808.5kbps avg ( 154.6[inst], 1015.4[mov.avg]) cwnd
201 rtt3218.3ms
120.5: 801.6kbps avg ( -0.0[inst], 913.9[mov.avg]) cwnd
184 rtt3297.8ms
121.5: 794.9kbps avg ( 0.0[inst], 822.5[mov.avg]) cwnd
162 rtt3321.8ms
122.5: 792.1kbps avg ( 462.4[inst], 786.5[mov.avg]) cwnd
158 rtt3440.8ms
123.5: 808.1kbps avg ( 2703.0[inst], 978.1[mov.avg]) cwnd
161 rtt3383.5ms
124.6: 805.9kbps avg ( 527.8[inst], 933.1[mov.avg]) cwnd
167 rtt3339.2ms

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سناریوی دوم)

```

"host: h3"
152.5s - received: 15191/ sent: 17539 pkts (loss 13.387%), 90
0.0 kbit/s
153.5s - received: 15320/ sent: 17676 pkts (loss 13.329%), 102
0.0 kbit/s
154.5s - received: 15429/ sent: 17801 pkts (loss 13.325%), 86
7.2 kbit/s
155.5s - received: 15545/ sent: 17934 pkts (loss 13.321%), 92
1.8 kbit/s
156.5s - received: 15659/ sent: 18054 pkts (loss 13.266%), 90
6.7 kbit/s
packet received = 15663 / 18059 sent: 13.268% loss

```

"host: h1"

```
133.3s - sent: 16646 pkts, 890.1 kbits/s
134.3s - sent: 16780 pkts, 1013.2 kbits/s
135.3s - sent: 16919 pkts, 1103.9 kbits/s
136.4s - sent: 17045 pkts, 999.5 kbits/s
137.4s - sent: 17171 pkts, 1001.3 kbits/s
138.4s - sent: 17297 pkts, 999.5 kbits/s
139.4s - sent: 17422 pkts, 999.7 kbits/s
140.4s - sent: 17547 pkts, 999.8 kbits/s
141.4s - sent: 17673 pkts, 999.7 kbits/s
142.4s - sent: 17798 pkts, 999.2 kbits/s
143.4s - sent: 17924 pkts, 1001.4 kbits/s
144.4s - sent: 18050 pkts, 997.6 kbits/s
^Cpackets sent = 18059, avg rate= 980.2kbps
```

```
1837.9 kbit/s
150.0s - received: 27308/ sent: 31257 pkts (loss 12.634%),
1850.7 kbit/s
151.0s - received: 27534/ sent: 31502 pkts (loss 12.596%),
1804.6 kbit/s
152.0s - received: 27771/ sent: 31757 pkts (loss 12.552%),
1890.2 kbit/s
153.0s - received: 28057/ sent: 32048 pkts (loss 12.453%),
2282.8 kbit/s
packet received = 28062 / 32053 sent: 12.451% loss
^C
```

"host: h2"

```
115.8s - sent: 28955 pkts, 1999.9 kbits/s
116.8s - sent: 29205 pkts, 1984.2 kbits/s
117.8s - sent: 29458 pkts, 2012.7 kbits/s
118.8s - sent: 29707 pkts, 1975.3 kbits/s
119.8s - sent: 29961 pkts, 2019.2 kbits/s
120.8s - sent: 30213 pkts, 2005.2 kbits/s
121.9s - sent: 30464 pkts, 2004.6 kbits/s
122.9s - sent: 30714 pkts, 1998.1 kbits/s
123.9s - sent: 30965 pkts, 2003.1 kbits/s
124.9s - sent: 31216 pkts, 1997.4 kbits/s
125.9s - sent: 31466 pkts, 1997.8 kbits/s
126.9s - sent: 31717 pkts, 2007.4 kbits/s
127.9s - sent: 31967 pkts, 1997.7 kbits/s
^Cpackets sent = 32053, avg rate=1958.1kbps
```



```

2 rtt3215.2ms
119.4: 56.4kbps avg ( -0.0[inst], 3.2[mov.avg]) cwnd
2 rtt3215.2ms
120.4: 56.0kbps avg ( -0.0[inst], 2.9[mov.avg]) cwnd
2 rtt3215.2ms
121.4: 55.8kbps avg ( 33.0[inst], 5.9[mov.avg]) cwnd
3 rtt3194.1ms
122.5: 55.3kbps avg ( -0.0[inst], 5.3[mov.avg]) cwnd
3 rtt3194.1ms
123.5: 54.8kbps avg ( -0.0[inst], 4.8[mov.avg]) cwnd
3 rtt3194.1ms
124.5: 54.6kbps avg ( 22.2[inst], 6.5[mov.avg]) cwnd
4 rtt3127.3ms
^C

```

سناریوی سوم)

```

"host: h3"
148.4s - received: 7126/ sent: 16452 pkts (loss 56.686%), 34
9.6 kbit/s
149.4s - received: 7170/ sent: 16574 pkts (loss 56.739%), 34
4.4 kbit/s
150.4s - received: 7201/ sent: 16690 pkts (loss 56.854%), 23
9.0 kbit/s
151.5s - received: 7241/ sent: 16821 pkts (loss 56.953%), 31
8.4 kbit/s
152.5s - received: 7296/ sent: 16952 pkts (loss 56.961%), 41
3.0 kbit/s
packet received = 7312 / 17020 sent: 57.039% loss
^C

```

```

"host: h1"
124.9s - sent: 15612 pkts, 1002.2 kbits/s
125.9s - sent: 15738 pkts, 1000.5 kbits/s
126.9s - sent: 15863 pkts, 982.8 kbits/s
127.9s - sent: 15991 pkts, 1014.0 kbits/s
128.9s - sent: 16117 pkts, 997.1 kbits/s
129.9s - sent: 16243 pkts, 1006.4 kbits/s
130.9s - sent: 16368 pkts, 996.8 kbits/s
131.9s - sent: 16494 pkts, 1002.4 kbits/s
133.0s - sent: 16620 pkts, 996.6 kbits/s
134.0s - sent: 16746 pkts, 1004.2 kbits/s
135.0s - sent: 16871 pkts, 988.4 kbits/s
136.0s - sent: 16998 pkts, 1014.8 kbits/s
^Cpackets sent = 17023, avg rate= 975.9kbps

```

```

2222.6 kbit/s
146.9s - received: 33838/ sent: 70592 pkts (loss 52.065%),
1990.4 kbit/s
147.9s - received: 34163/ sent: 71158 pkts (loss 51.990%),
2596.1 kbit/s
148.9s - received: 34467/ sent: 71753 pkts (loss 51.964%),
2419.0 kbit/s
150.0s - received: 34720/ sent: 72349 pkts (loss 52.010%),
2016.1 kbit/s
packet received = 34982 / 72794 sent: 51.944% loss
^C
root@root-arkhani: /home/root-arkhani/Desktop/mininet/mininet

```

```

"host: h2"
117.4s - sent: 66027 pkts, 4497.3 kbits/s
118.4s - sent: 66591 pkts, 4502.8 kbits/s
119.4s - sent: 67154 pkts, 4502.1 kbits/s
120.4s - sent: 67716 pkts, 4489.5 kbits/s
121.4s - sent: 68280 pkts, 4509.9 kbits/s
122.4s - sent: 68843 pkts, 4502.3 kbits/s
123.4s - sent: 69406 pkts, 4455.6 kbits/s
124.4s - sent: 69972 pkts, 4523.9 kbits/s
125.4s - sent: 70537 pkts, 4515.9 kbits/s
126.4s - sent: 71099 pkts, 4487.5 kbits/s
127.4s - sent: 71663 pkts, 4507.4 kbits/s
128.4s - sent: 72227 pkts, 4511.7 kbits/s
129.4s - sent: 72786 pkts, 4468.5 kbits/s
^C packets sent = 72794, avg rate=4389.4kbps

```

```

1 rtt3106.6ms
118.9: 0.7kbps avg ( -0.0[inst], 0.0[mov.avg]) cwnd
1 rtt3106.6ms
119.9: 0.7kbps avg ( -0.0[inst], 0.0[mov.avg]) cwnd
1 rtt3106.6ms
121.0: 0.7kbps avg ( -0.0[inst], 0.0[mov.avg]) cwnd
1 rtt3106.6ms
122.0: 0.7kbps avg ( -0.0[inst], -0.0[mov.avg]) cwnd
1 rtt3106.6ms
123.0: 0.7kbps avg ( -0.0[inst], -0.0[mov.avg]) cwnd
1 rtt3106.6ms
124.0: 0.7kbps avg ( -0.0[inst], -0.0[mov.avg]) cwnd
1 rtt3106.6ms
^C

```

سوال ۳: این تفاوت ها اندک هستند و ناشی از این هستند که آنالیز مربوط به loss ما تقریبی است و این فرض را کرده ایم که bandwidth مربوط به host ها جدا و ثابت هستند.