

C Language Programming: Homework #6
Assigned on 11/20/2018(Tuesday), Due on 12/04/2018(Tuesday)

Description:

This assignment allows you to practice processing strings stored in a file. You are required to do:

1. (10%) Use command line to input the filename
2. Read the rules in the input file, where each line of the input file contains a rule in the following format:

@IP/len IP/len SPb : SPe DPb : DPe Pro/bitmap

3. (60%) Count # of rules in the file and obtain the analysis results like the one shown below and print on screen.

Analysis result

All Group	Table	ACL1	ACL2	ACL3	ACL4	ACL5	FW1	FW2	FW3	FW4	FW5	IPC1	IPC2
# of distinct field value	F1(P)	99047	7300	86058	88817	36541	22635	81348	16671	38192	29185	86294	47562
	F2(P)	284	8796	86493	30146	75100	66164	30704	62843	67159	53894	90603	88953
	F3(R)	1	1	3	3	1	13	9	9	28	11	34	3
	F4(R)	108	27	190	235	40	43	1	39	49	33	54	3
	F5(R)	4	5	5	7	4	5	5	4	9	4	7	4
# of *	F1(P)	89	2382	7232	4848	0	37310	9237	38501	30138	32275	7986	34637
	F2(P)	453	3847	8701	7663	0	13750	47053	13002	10547	19091	5581	7322
	F3(R)	99339	73981	99472	99079	97855	68798	34088	65869	7797	62194	80966	73867
	F4(R)	28315	46882	9058	8302	28298	23966	95976	18612	9852	28074	55962	73302
	F5(R)	8207	29589	4872	3934	0	835	24135	989	5075	1385	34020	26760
Total Rules		99339	73981	99514	99117	97855	88562	95976	83442	83848	84340	99306	100000

4. (15%) Obtain all the distinct subrules consisting only the **last three fields**: SPb : SPe DPb : DPe Pro/bitmap and print on screen. For example, the following rule table contains 5 distinct subrules.
5. (20%) Report with right format should be both printed out and updated on server.

File that stores rules

```
@233.117.49.48/28 233.117.49.32/28 750 : 750 123 : 123 0x11/0xFF
@250.188.119.192/28 250.188.119.208/28 123 : 123 750 : 750 0x11/0xFF
@249.24.109.176/28 156.228.146.64/28 53 : 53 2105 : 2105 0x11/0xFF
...
@208.46.198.160/30 210.161.55.35/32 0 : 65535 0 : 65535 0x00/0x00
...
@0.0.0.0/0 0.0.0.0/0 0 : 65535 0 : 65535 0x2f/0xFF
@228.0.0.0/8 0.0.0.0/0 0 : 65535 0 : 65535 0x00/0x00
@190.0.0.0/8 0.0.0.0/0 0 : 65535 0 : 65535 0x00/0x00
@0.0.0.0/0 0.0.0.0/0 0 : 65535 0 : 65535 0x00/0x00
```

Command Line:

./hw6 fw500_1K.txt

Example Output :

F1: 22635 *// # of distinct field value*

F2: 66164

F3: 13

F4: 43

F5: 5

F1: 37310 *// # of **

F2: 13750

F3: 68798

F4: 23966

F5: 835

88562 *// total rules*

5 *// the distinct subrules consisting only the last three fields*

(You should follow above format as output **printed on screen.**)