EE6094
CAD for VLSI Design

Checker and Makefile

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Slides Credit: TA何宜真

Outline

- Checker
- Makefile

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Checker

- How to use the checker?
  - Step 1: Make sure you put your checker, testcase and your output file testcase_out.txt at the **same folder**.
  - Step 2: Make sure the format of your output file is correct.
  - Step 3: Key in the following commands.

    ./pa3_checker your_input_file your_output_file

  For example:

```
./pa3_checker t10.txt t10_out.txt
```

Checker

- If you do not have permission to execute checker:

```
./pa3_checker: Permission denied.
```

  - Key in the following commands.

    chmod 755 pa3_checker

  For example:

```
chmod 755 pa3_checker
```


Checker

- Example t10.txt

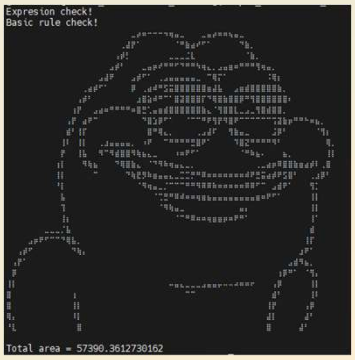
```
10
0 4181
1 2698
2 855
3 9339
4 5206
5 1920
6 5404
7 9634
8 8535
9 9551
```

Checker

- If your program is correct, you will get “a happy smile frog” and the result of the area.

```
145.86962 393.43601 57390.3612730162
65.00631 64.31683
73.45563 36.72965
22.65869 37.73387
72.10470 129.51998
80.84839 64.39213
50.74854 37.83360
72.38002 74.66149
77.27416 124.67299
68.59546 124.42514
73.63383 129.70940
9 3 V 6 1 5 2 V H V H 0 4 V H 8 7 V H
```

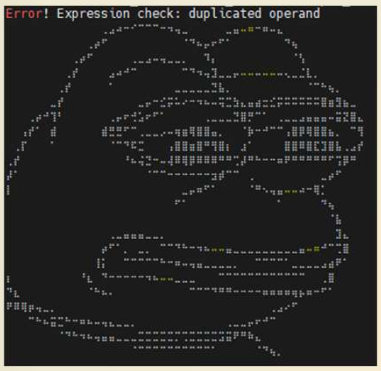
testcase_out.txt



result

Checker

- If your program is wrong, you will get “a sad frog” and the detail.



result

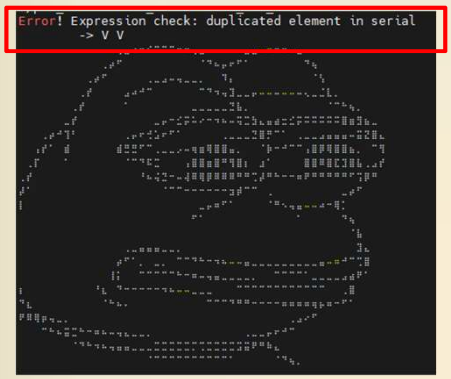
Checker

- Error type:
  - Normalized Polish Expression
  - basic rule (aspect ratio, error rate of module area…)

result

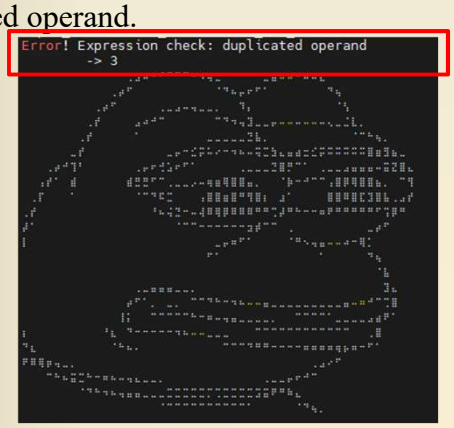
Checker

- Normalized Polish Expression
  - For example, NPE=0 1 H 2 3 V V, which V is the duplicated operator.



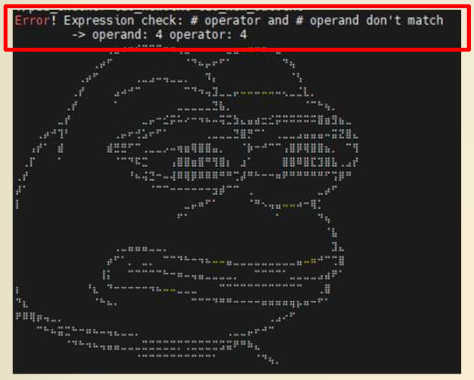
Checker

- Normalized Polish Expression
  - For example, NPE=0 1 H 2 2 V H, which 2 is the duplicated operand.



Checker

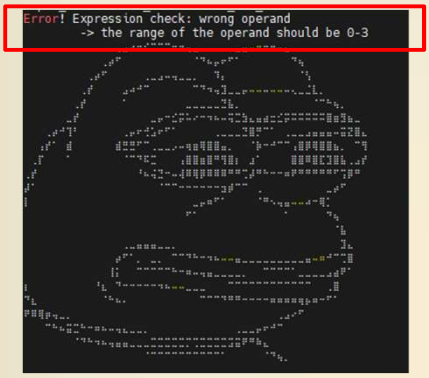
- Normalized Polish Expression
  - For example, NPE=1 2 V 3 0 H V H, which # of operand =4. Hence, # of operator should be 3.



Checker

◆Normalized Polish Expression

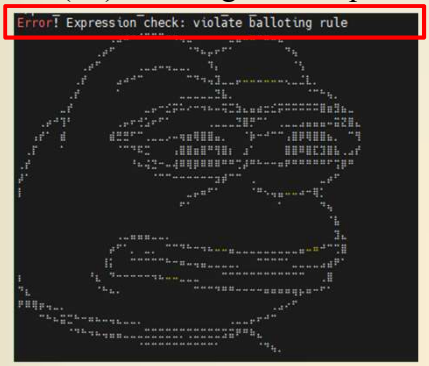
➢ For example, NPE=0 1 V 2 50 H V, which 50 is the wrong operand.



Checker

◆Normalized Polish Expression

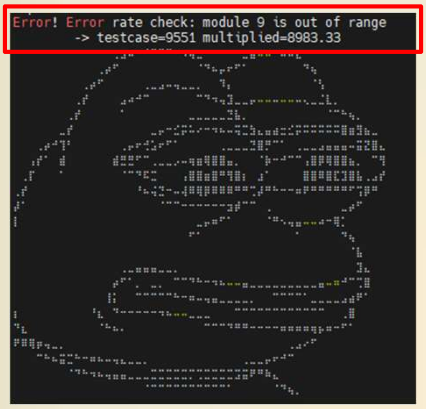
➢ For example, NPE=1 2 V H 3 0 V. The case, 1 2 V H, which operand(=2) isn't larger than operator(=2).



Checker

◆Basic rule

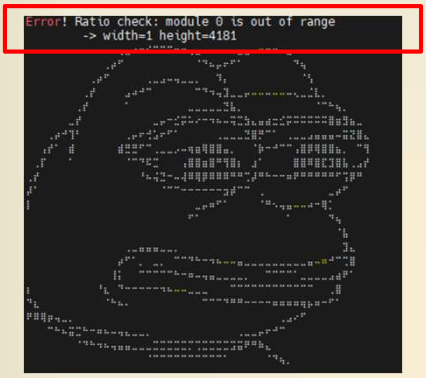
➢ For example, error rate of module area is out of 1%.



Checker

◆Basic rule

➢ For example, ratio of module is out of range.



Outline

- Checker
- Makefile

Makefile

- In demo session, TA will test your makefile in the following commands.
  - *make all*
  - *make run input=your_input_file output=your_output_file*
  - *make clean*

Makefile

◆*make all*

```
[110521009@eda359_forclass PA3]$ make all
Creating object directory
Compiling: src/main.cpp -> build/main.o
Compiling: src/SA.cpp -> build/SA.o
Compiling: src/functions.cpp -> build/functions.o
Generating executable file: build/main.o build/SA.o build/functions.o -> exe
[110521009@eda359_forclass PA3]$ ls
build  exe  makefile  src  t10_out.txt  t10.txt  testpattern
[110521009@eda359_forclass PA3]$ ls build/
functions.o  main.o  SA.o
[110521009@eda359_forclass PA3]$
```

After *make all* , an executable file and object file are generated

Makefile

◆*make run*

```
[110521009@eda359_forclass PA3]$ make run input=t10.txt output=t10_out.txt
./exe t10.txt t10_out.txt
Yeah! I did it right :)
[110521009@eda359_forclass PA3]$
```

Note that using cout will slow down runtime.

Makefile

- *make clean*

```
[110521009@eda359_forclass PA3]$ ls
build  exe  makefile  src  t10_out.txt  t10.txt  testpattern
[110521009@eda359_forclass PA3]$ ls build/
functions.o  main.o  SA.o
[110521009@eda359_forclass PA3]$ make clean
Removing objects
Removing executable file
[110521009@eda359_forclass PA3]$ ls
makefile  src  t10_out.txt  t10.txt  testpattern
[110521009@eda359_forclass PA3]$
```