

Homework3 Description

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Test Bench 1

- **Basic Requirements:**
 - Title/Comments/.end
 - Basic two ports element: R
 - Basic Voltage Source (DC Only)
 - Basic Analysis (Op only)
- **Show Parsing Information:** recommend to **display the parsed information** as below case

Input netlist:

```
1 TestBench1 for Homework3
2 * 2022 EDA course testbench netlist
3 Vin 1 0 3
4 R1 1 2 200
5 R2 2 0 100
6 .op
7 .end
```

Output Parsing Info. Format (Recommend)

→ Parsed Title

→ Parsed Annotation

→ Parsed Device Type: Voltage Source (Name: vin; DC value:3; Node1: 1; Node2: 0)

→ Parsed Device Type: Resistor (Name: R1; value: 200; Node1: 1; Node2: 2)

→ Parsed Device Type: Resistor (Name: R2; value:100; Node1: 2; Node2: 0)

→ Parsed Analysis Command .OP Token

→ Parsed .END Token

Test Bench 2

- **Advanced Requirements:**
 - Parse a capacitor
 - Parse DC analysis
 - Parse Print output
- **Show Parsing Information:** recommend to **display the parsed information** as below case

Input netlist:

```
TestBench2 for Homework3
```

```
Vin 1 0 3
```

```
R1 1 2 2k
```

```
R2 2 0 100
```

```
C1 2 0 2e-10
```

```
.DC Vin 0.5 2 0.1
```

```
.Print DC V(2)
```

```
.end
```

Output Parsing Info. Format (Recommend)

→ Parsed Title

→ Parsed Device Type: Voltage Source (Name : vin; DC value:3; Node1: 1; Node2: 0)

→ Parsed Device Type: Resistor (Name : R1; value:2000; Node1: 1; Node2: 2)

→ Parsed Device Type: Resistor (Name : R2; value:100; Node1: 2; Node2: 0)

→ Parsed Device Type: Capacitor (Name : C1; value: 2e-10; Node1:2; Node2: 0)

→ Parsed Analysis Command DC (Vsrc: Vin; Start: 0.5; End: 2; Step:0.1)

→ Parsed Output Command Print (Type: DC ; Type: Voltage 2)

→ Parsed .END Token

Test Bench 3

- **Parse Requirements in TB3:**
 - **Parse correct lines.**
 - **Count device number.**
 - **Count node number.**
- Output message(example):
 - Device: 24
 - R: 6 L: 6 C: 12
 - Vsrc: 4
 - Node: 11

Test Bench 4

- **Parse Requirements in TB4:**
 - Parse correct lines.
 - Find out all errors.
 - Line number is required when print error messages.
- Print error messages(example):
 - line 4 : Fail to parse R2.

Grades

- **Full Marks: 10 points in Homework3.**
- **Scores For Each Test Bench:**
 - **Test Bench 1: 5**
 - **Test Bench 2: 3**
 - **Test Bench 3: 1**
 - **Test Bench 4: 1**

Requirement

- **(Hand-in is required!) –**
 - **You must submit your HW to Canvas (in one week after this lecture is finished).**
- **Please write a Qt/C++ program that**
 - can read a netlist file
 - can extract the netlist lines
 - can recognize “**comments**”, “**element lines**”, “**dot commands**”, etc.
 - can extract the tokens in the element statements & control statements
 - ... **(more better!), such as parsing a netlist in GUI**
- **Create some test netlists by yourself (TA will provide some).**
- **Include in your HW submission the test netlists and the execution results.**
- **If you use other programming languages, please do the equivalent work.**
- **Submit a PDF file with a name like this for easy identification:**
- **中文姓名_HW3.pdf**

Lecture 5B

slide 15

Screenshot of TA's SPICE

