

Fault detection and corrections

1. In function `is_num_constant`

Fault: (i+1) Out of bound index issues

```
307         if(Character.isDigit(str.charAt(i+1)))
```

Correction: Using i

```
307         if(Character.isDigit(str.charAt(i))) //Fault instead of i+1, it should be i
```

2. In function `is_num_constant`

Fault: = sign on while condition

```
305         while ( i <= str.length() && str.charAt(i) != '\0' ) /* until meet token end sig
```

Correction:

```
305         while ( i < str.length() && str.charAt(i) != '\0' )
```

3. In function `is_str_constant`

Fault : Not checking the whole string, but just the first index.

```
{ while (i < str.length() && str.charAt(0)!='\0')
```

Correction: Using 'i' to check all positions

```
328 { while (i < str.length() && str.charAt(i)!='\0')
```

i instead of 0 as need to check the whole condition

4. In function is_str_constant

Fault: Logic error , Returning 'true' for only one quote.

```
334 return true;
```

Correction: Correcting to return false for a single quote checking.

```
334 return false; //Fault detected! return false instead of true
```

5. In function is_identifier

Fault: If a character is a letter, false is being returned.

```
358 return false;
```

Correction :- True should be returned when character is a letter.

```
358 return true; //Fault detected! Should return true
```

6. In function is_identifier

Fault :- If no condition are met, true is returned which is the problem.

```
360 else
361 return true;
```

Correction :- False should be returned if even the first condition is not satisfied.

```
360 else
361 return false; //Fault detected! Should return false!
```

7. In function main

Fault -System.exit terminates the whole program

```
458         System.out.println(" ");
459         System.exit(0);
: 460     }
```

Correction :- For Junit tests to run for values, return should be used.

```
464         return; //Fault
465     }
```

8. In function main,

Fault :- System.exit terminates the whole program

```
470         System.exit(0);
471     }
```

Correction:- For Junit tests to run for values, return should be used.

```
475         return; //Fault
```

9. In function, print_spec_symbol line 379

Fault :- Wrong bracket for 'lparen'

```
374         if (str.equals("{"))
375         {
376
```

Correction :- Correct the curly bracket to regular bracket

```
379         if (str.equals("(")) //Fault!
380         {
381
382             System.out.println("lparen.\n");
383             return;
384     }
```

10. In function is_char_constant

Fault :- The condition for length of str for char_const should be 2.

```
287     {
288         if (str.length() > 2 && str.charAt(0)=='#' && Character.isLetter(str.charAt(1)))
```

Correction :- Changing condition to ==2

```
292     {
293         if (str.length() == 2 && str.charAt(0)=='#' && Character.isLetter(str.charAt(1))) ,
```

11. In function, print_token

Fault :- Missing condition check and print statement for str_constant

Correction :- Adding as shown below

```
250     if(type==str_constant)// Missing for string constant function - Fault
251     {
252         System.out.print("stringcons, \"" + tok + "\".\n");
253     }
```

12. In function, get_token,

Fault :- Logic errors

```
118         if(ch == '"')id=2;        /* prepare for string */
119         if(ch ==59)id=1;           /* prepare for comment */
120
```

Correction :- Logic errors for token fixed

```
119         if(ch == '"')id=1;        /
120         if(ch ==59)id=2;           /*
```

13. In open_token_steram

Fault:- .equals is not a right way to check for null

```
80    if(fname.equals("")) |
```

Correction :- Proper way to check for null instead of .equals

```
80    if(fname==null) //fault detected
```

14. In print_spec_symbol,

Fault:- Missing check for comma

Correction :- Added check for comma

```
400    if (str.equals(",")) //Missing for special symbol comma!  
401    {  
402        System.out.print("comma.\n");  
403        return;  
404    }
```