Министерство науки и высшего образования Российской Федерации

Федеральное государственное бюджетное образовательное

учреждение высшего образования

«Алтайский государственный технический университет им. И. И. Ползунова»

Факультет информационных технологий

Кафедра прикладной математики

Отчет защищен с оценкой\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Преподаватель Крючкова Е. Н.

«\_\_\_»\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2022 г.

Отчет

Расчетное задание

Комплексное тестирование анализатора языка программирования

по дисциплине «Теория алгоритмических языков и трансляторов»

Студент группы ПИ 91 В.М. Шульпов

**Задание:**

Программа: главная программа языка C++.

Допускается описание массивов любой размерности

Типы данных: int (short и long), bool

Операции: все арифметические бинарные и унарные, сравнения.

Операторы: пустой, составной, присваивания и switch.

Операнды: простые переменные, элементы массивов, константы и именованные константы.

Константы: все целые и символьные.

Задание:

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**Лексические ошибки**

**Тест 1**

**Тестируемый код:**

void main() {

const int a=0;

int b=99;

bool isEqual = a >= b;

isEqual = a != b;

isEqual = !isEqual;

a++;

--b;

//olloffoofofofofoofofo

int i[10] = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10};

short a1 = 5;

long a2 = 5000000000;

isEqual = true;

isEqual = false;

const long someVar = 100000000;

const short someVar2 = 10;

b = someVar - someVar2;

a = b++;

a += 100;

a -= 100;

//commented...........

{

int c = 100;

};

a = (a \* 2) / 2 + (10 \* a++) - (--a + true);

a < 1;

(a>100);

a /= 10;

a %= 2;

b = b / a;

b = 100 % 10;

/\* jdfslkflisdjfisldjfidsjfisjdif jsdijf jjsdfjsdjf sdjf u2903ur0923 2jfwm ;fmwef wef we68f6 8\wefw \*/

int num = 999;

switch (num) {

case (num > 1000):

a \*= 100;

break;

case (num == 1000):

a / 10;

break;

case (num < 1000):

a += 10;

break;

default:

a %= 2;

break;

}

isEqual = false >= 1;

isEqual true <= 1;

1 == 10;

1 == true;

1 < 4;

//aha[[fa[[af[[

'a' < 100;

400 > 40;

a -= 1;

a++;

a += 10;

isEqual = true != false;

isEqual = true != 0;

isEqual = 1 != 1;

isEqual = 'a' > 'b';

return 0;

//the end of programmmmmmmmmmmmmmmmmmmmmmmmmmmmmm...

a=100;

switch (a) {

case 1:

a \*= 100;

break;

case 10:

a \*= 10;

break;

default:

a = 0;

break;

}

//le3r3r3ff

}

**Результат**

C:\Users\Victor\CLionProjects\scanner-lab4\cmake-build-debug\scanner\_lab4.exe

void -> 204

main -> 206

( -> 103

) -> 104

{ -> 105

const -> 210

int -> 200

a -> 3

= -> 311

0 -> 1

; -> 102

int -> 200

b -> 3

= -> 311

99 -> 1

; -> 102

bool -> 203

isEqual -> 3

= -> 311

a -> 3

>= -> 305

b -> 3

; -> 102

isEqual -> 3

= -> 311

a -> 3

!= -> 307

b -> 3

; -> 102

isEqual -> 3

= -> 311

! -> 401

isEqual -> 3

; -> 102

a -> 3

++ -> 312

; -> 102

-- -> 313

b -> 3

; -> 102

int -> 200

i -> 3

[ -> 108

10 -> 1

] -> 109

= -> 311

{ -> 105

1 -> 1

, -> 101

2 -> 1

, -> 101

3 -> 1

, -> 101

4 -> 1

, -> 101

5 -> 1

, -> 101

6 -> 1

, -> 101

7 -> 1

, -> 101

8 -> 1

, -> 101

9 -> 1

, -> 101

10 -> 1

} -> 106

; -> 102

short -> 201

a1 -> 3

= -> 311

5 -> 1

; -> 102

long -> 202

a2 -> 3

= -> 311

5000000000 -> 1

; -> 102

isEqual -> 3

= -> 311

true -> 207

; -> 102

isEqual -> 3

= -> 311

false -> 208

; -> 102

const -> 210

long -> 202

someVar -> 3

= -> 311

100000000 -> 1

; -> 102

const -> 210

short -> 201

someVar2 -> 3

= -> 311

10 -> 1

; -> 102

b -> 3

= -> 311

someVar -> 3

- -> 301

someVar2 -> 3

; -> 102

a -> 3

= -> 311

b -> 3

++ -> 312

; -> 102

a -> 3

+= -> 314

100 -> 1

; -> 102

a -> 3

-= -> 317

100 -> 1

; -> 102

{ -> 105

int -> 200

c -> 3

= -> 311

100 -> 1

; -> 102

} -> 106

; -> 102

a -> 3

= -> 311

( -> 103

a -> 3

\* -> 308

2 -> 1

) -> 104

/ -> 309

2 -> 1

+ -> 300

( -> 103

10 -> 1

\* -> 308

a -> 3

++ -> 312

) -> 104

- -> 301

( -> 103

-- -> 313

a -> 3

+ -> 300

true -> 207

) -> 104

; -> 102

a -> 3

< -> 302

1 -> 1

; -> 102

( -> 103

a -> 3

> -> 303

100 -> 1

) -> 104

; -> 102

a -> 3

/= -> 316

10 -> 1

; -> 102

a -> 3

%= -> 318

2 -> 1

; -> 102

b -> 3

= -> 311

b -> 3

/ -> 309

a -> 3

; -> 102

b -> 3

= -> 311

100 -> 1

% -> 310

10 -> 1

; -> 102

int -> 200

num -> 3

= -> 311

999 -> 1

; -> 102

switch -> 209

( -> 103

num -> 3

) -> 104

{ -> 105

case -> 212

( -> 103

num -> 3

> -> 303

1000 -> 1

) -> 104

: -> 107

a -> 3

\*= -> 315

100 -> 1

; -> 102

break -> 213

; -> 102

case -> 212

( -> 103

num -> 3

== -> 306

1000 -> 1

) -> 104

: -> 107

a -> 3

/ -> 309

10 -> 1

; -> 102

break -> 213

; -> 102

case -> 212

( -> 103

num -> 3

< -> 302

1000 -> 1

) -> 104

: -> 107

a -> 3

+= -> 314

10 -> 1

; -> 102

break -> 213

; -> 102

default -> 211

: -> 107

a -> 3

%= -> 318

2 -> 1

; -> 102

break -> 213

; -> 102

} -> 106

isEqual -> 3

= -> 311

false -> 208

>= -> 305

1 -> 1

; -> 102

isEqual -> 3

true -> 207

<= -> 304

1 -> 1

; -> 102

1 -> 1

== -> 306

10 -> 1

; -> 102

1 -> 1

== -> 306

true -> 207

; -> 102

1 -> 1

< -> 302

4 -> 1

; -> 102

'a' -> 2

< -> 302

100 -> 1

; -> 102

400 -> 1

> -> 303

40 -> 1

; -> 102

a -> 3

-= -> 317

1 -> 1

; -> 102

a -> 3

++ -> 312

; -> 102

a -> 3

+= -> 314

10 -> 1

; -> 102

isEqual -> 3

= -> 311

true -> 207

!= -> 307

false -> 208

; -> 102

isEqual -> 3

= -> 311

true -> 207

!= -> 307

0 -> 1

; -> 102

isEqual -> 3

= -> 311

1 -> 1

!= -> 307

1 -> 1

; -> 102

isEqual -> 3

= -> 311

'a' -> 2

> -> 303

'b' -> 2

; -> 102

return -> 205

0 -> 1

; -> 102

a -> 3

= -> 311

100 -> 1

; -> 102

switch -> 209

( -> 103

a -> 3

) -> 104

{ -> 105

case -> 212

1 -> 1

: -> 107

a -> 3

\*= -> 315

100 -> 1

; -> 102

break -> 213

; -> 102

case -> 212

10 -> 1

: -> 107

a -> 3

\*= -> 315

10 -> 1

; -> 102

break -> 213

; -> 102

default -> 211

: -> 107

a -> 3

= -> 311

0 -> 1

; -> 102

break -> 213

; -> 102

} -> 106

} -> 106

end -> 400

Process finished with exit code 0

**Тест 2:**

**Исходный код с ошибками**

void main() {

int ptr = 01;

ptr=0;

const int a=0;

int b=99;

bool isEqual = a >= b;

isEqual = a != b;

isEqual = !isEqual;

a++;

--b;

if(true){};

for(int i=0; i<10; i++);

true ? 100 : -100;

//olloffoofofofofoofofo

int i[10] = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10};

short a1 = 5;

long a2 = 5000000000;

isEqual = !true;

isEqual = false;

const long someVar = 100000000;

const short someVar2 = 10;

b = someVar - someVar2;

a = b++;

a += 100;

a & b;

a | c;

a = 0000004;

a = 0x56;

a -= 100;

//commented...........

func(bool a100);

{

int c = 100;

};

a = (a \* 2) / 2 + (10 \* a++) - (--a + true);

a < 1;

(a>\*100);

a /= 10;

a %= 2;

b = b / a;

b === 100 % 10;

/\* jdfslkflisdjfisldjfidsjfisjdif jsdijf jjsdfjsdjf sdjf u2903ur0923 2jfwm ;fmwef wef we68f6 8\wefw \*/

int num = 0x999;

switch (num) {

case (num > 1000):

a \*= 100;

break;

case (num == 1000):

a / 10;

break;

case (num < 1000):

a += 10;

break;

default:

a %= 2;

break;

}

isEqual = false >= 1;

isEqual true <= 1;

1 == 10;

1 == true;

1 < 4;

//aha[[fa[[af[[

'a' < 100;

400 > 40;

a -= 1;

int int = 1;

'a';

a++;

a += 10;

isEqual = true != false;

isEqual = true != 0;

isEqual = 1 != 1;

isEqual = 'a' > 'b';

return 0;

//the end of programmmmmmmmmmmmmmmmmmmmmmmmmmmmmm...

a=100;

switch (a) {

case 1:

a \*= 100;

break;

case 10:

a \*= 10;

break;

default:

a = 0;

break;

}

//le3r3r3ff

#comment

'fff';

}

**Результат:**

C:\Users\Victor\CLionProjects\scanner-lab4\cmake-build-debug\scanner\_lab4.exe

void -> 204

main -> 206

( -> 103

) -> 104

{ -> 105

int -> 200

ptr -> 3

= -> 311

Wrong at line 2 Error symbol: 01 ; -> 102

ptr -> 3

= -> 311

0 -> 1

; -> 102

const -> 210

int -> 200

a -> 3

= -> 311

0 -> 1

; -> 102

int -> 200

b -> 3

= -> 311

99 -> 1

; -> 102

bool -> 203

isEqual -> 3

= -> 311

a -> 3

>= -> 305

b -> 3

; -> 102

isEqual -> 3

= -> 311

a -> 3

!= -> 307

b -> 3

; -> 102

isEqual -> 3

= -> 311

Error no '!' operation

! -> 401

isEqual -> 3

; -> 102

a -> 3

++ -> 312

; -> 102

-- -> 313

b -> 3

; -> 102

if -> 3

( -> 103

true -> 207

) -> 104

{ -> 105

} -> 106

; -> 102

for -> 3

( -> 103

int -> 200

i -> 3

= -> 311

0 -> 1

; -> 102

i -> 3

< -> 302

10 -> 1

; -> 102

i -> 3

++ -> 312

) -> 104

; -> 102

true -> 207

Wrong at line 13 Error symbol: ? 100 -> 1

: -> 107

- -> 301

100 -> 1

; -> 102

int -> 200

i -> 3

[ -> 108

10 -> 1

] -> 109

= -> 311

{ -> 105

1 -> 1

, -> 101

2 -> 1

, -> 101

3 -> 1

, -> 101

4 -> 1

, -> 101

5 -> 1

, -> 101

6 -> 1

, -> 101

7 -> 1

, -> 101

8 -> 1

, -> 101

9 -> 1

, -> 101

10 -> 1

} -> 106

; -> 102

short -> 201

a1 -> 3

= -> 311

5 -> 1

; -> 102

long -> 202

a2 -> 3

= -> 311

5000000000 -> 1

; -> 102

isEqual -> 3

= -> 311

Error no '!' operation

! -> 401

true -> 207

; -> 102

isEqual -> 3

= -> 311

false -> 208

; -> 102

const -> 210

long -> 202

someVar -> 3

= -> 311

100000000 -> 1

; -> 102

const -> 210

short -> 201

someVar2 -> 3

= -> 311

10 -> 1

; -> 102

b -> 3

= -> 311

someVar -> 3

- -> 301

someVar2 -> 3

; -> 102

a -> 3

= -> 311

b -> 3

++ -> 312

; -> 102

a -> 3

+= -> 314

100 -> 1

; -> 102

a -> 3

Wrong at line 26 Error symbol: & b -> 3

; -> 102

a -> 3

Wrong at line 27 Error symbol: | c -> 3

; -> 102

a -> 3

= -> 311

Wrong at line 28 Error symbol: 0000004 ; -> 102

a -> 3

= -> 311

0 -> 1

x56 -> 3

; -> 102

a -> 3

-= -> 317

100 -> 1

; -> 102

func -> 3

( -> 103

bool -> 203

a100 -> 3

) -> 104

; -> 102

{ -> 105

int -> 200

c -> 3

= -> 311

100 -> 1

; -> 102

} -> 106

; -> 102

a -> 3

= -> 311

( -> 103

a -> 3

\* -> 308

2 -> 1

) -> 104

/ -> 309

2 -> 1

+ -> 300

( -> 103

10 -> 1

\* -> 308

a -> 3

++ -> 312

) -> 104

- -> 301

( -> 103

-- -> 313

a -> 3

+ -> 300

true -> 207

) -> 104

; -> 102

a -> 3

< -> 302

1 -> 1

; -> 102

( -> 103

a -> 3

> -> 303

\* -> 308

100 -> 1

) -> 104

; -> 102

a -> 3

/= -> 316

10 -> 1

; -> 102

a -> 3

%= -> 318

2 -> 1

; -> 102

b -> 3

= -> 311

b -> 3

/ -> 309

a -> 3

; -> 102

b -> 3

== -> 306

= -> 311

100 -> 1

% -> 310

10 -> 1

; -> 102

int -> 200

num -> 3

= -> 311

0 -> 1

x999 -> 3

; -> 102

switch -> 209

( -> 103

num -> 3

) -> 104

{ -> 105

case -> 212

( -> 103

num -> 3

> -> 303

1000 -> 1

) -> 104

: -> 107

a -> 3

\*= -> 315

100 -> 1

; -> 102

break -> 213

; -> 102

case -> 212

( -> 103

num -> 3

== -> 306

1000 -> 1

) -> 104

: -> 107

a -> 3

/ -> 309

10 -> 1

; -> 102

break -> 213

; -> 102

case -> 212

( -> 103

num -> 3

< -> 302

1000 -> 1

) -> 104

: -> 107

a -> 3

+= -> 314

10 -> 1

; -> 102

break -> 213

; -> 102

default -> 211

: -> 107

a -> 3

%= -> 318

2 -> 1

; -> 102

break -> 213

; -> 102

} -> 106

isEqual -> 3

= -> 311

false -> 208

>= -> 305

1 -> 1

; -> 102

isEqual -> 3

true -> 207

<= -> 304

1 -> 1

; -> 102

1 -> 1

== -> 306

10 -> 1

; -> 102

1 -> 1

== -> 306

true -> 207

; -> 102

1 -> 1

< -> 302

4 -> 1

; -> 102

'a' -> 2

< -> 302

100 -> 1

; -> 102

400 -> 1

> -> 303

40 -> 1

; -> 102

a -> 3

-= -> 317

1 -> 1

; -> 102

int -> 200

int -> 200

= -> 311

1 -> 1

; -> 102

'a' -> 2

; -> 102

a -> 3

++ -> 312

; -> 102

a -> 3

+= -> 314

10 -> 1

; -> 102

isEqual -> 3

= -> 311

true -> 207

!= -> 307

false -> 208

; -> 102

isEqual -> 3

= -> 311

true -> 207

!= -> 307

0 -> 1

; -> 102

isEqual -> 3

= -> 311

1 -> 1

!= -> 307

1 -> 1

; -> 102

isEqual -> 3

= -> 311

'a' -> 2

> -> 303

'b' -> 2

; -> 102

return -> 205

0 -> 1

; -> 102

a -> 3

= -> 311

100 -> 1

; -> 102

switch -> 209

( -> 103

a -> 3

) -> 104

{ -> 105

case -> 212

1 -> 1

: -> 107

a -> 3

\*= -> 315

100 -> 1

; -> 102

break -> 213

; -> 102

case -> 212

10 -> 1

: -> 107

a -> 3

\*= -> 315

10 -> 1

; -> 102

break -> 213

; -> 102

default -> 211

: -> 107

a -> 3

= -> 311

0 -> 1

; -> 102

break -> 213

; -> 102

} -> 106

Wrong at line 96 Error symbol: # comment -> 3

Error char constant

'f -> 401

ff -> 3

Error char constant

'; -> 401

} -> 106

end -> 400

Process finished with exit code 0

**Синтаксические ошибки**

**Тест без ошибок**

int funk(bool f, int o){

int a = 56, y;

bool b = false;

f = b && f + 4 \* r / (e + r - 5);

switch(0x56 < 6){

case 56:

a = b || f;

break;

case 7:

break;

default:

h = i \* a;

break;

t = 5;

}

long u = 0x43;

b = 0x9 + 7;

return b || a;

}

bool ff(){

f();

}

/\*aaaaaaaaaaaaaaaaa

aaaaaaaaaaaaaaaaaa\*\*/

int main(){

bool h = true, b;

h = a || j;

b = t && u;

funk(h >= a, m);

short f = 6 - r;

b = 57 / u / 5;

//24624rtefsdgrg

long r = !false;

t = true;

switch(f == true + 5){

case 6:

return 0;

break;

case false:

y = true;

break;

case 10:

break;

default:

c = a + 8 - 9 - 4;

a = 6 % 8 / t;

break;

}

y = 9 + y \* 5;

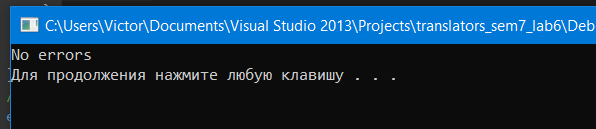
y = 8;

short y;

return r;

}

1)



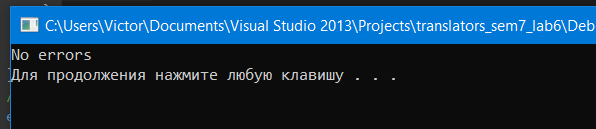
2)

Добавил после main точек с запятой и после enter пары фигурных скобок:

void main(){;;;;;

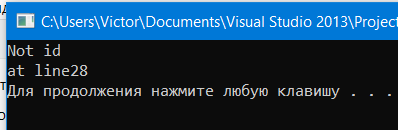
{}{}

…………



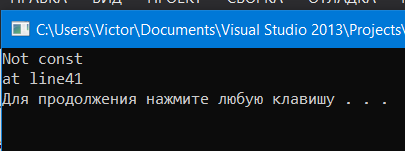
**Тесты с ошибками:**

bool ff(,)



2)

case variable1: вместо case 10:



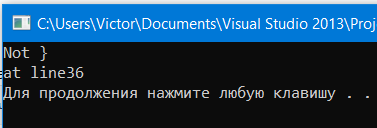
3)

switch(f == 7 + 5){

true;

case 6:

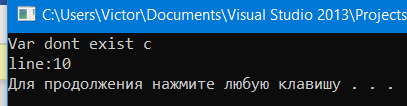
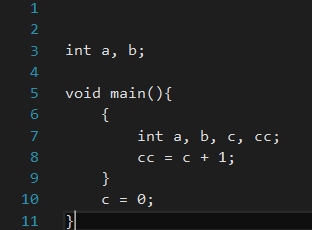
break;



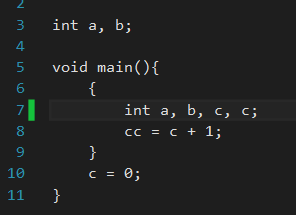
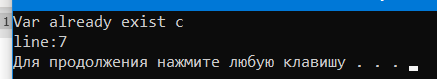
**Семантические ошибки**

Тесты с ошибками:

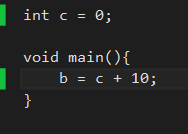
1)

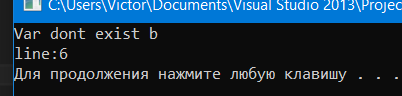


2)

3)





Тесты без ошибок:

1)

