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Section:- C
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CD LAB 8

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>

#include "q1.c"

void prog();
void dec();
void ilist();
void iprime();
void dtype();
void slist();
void s();
void AS();
void expn();
void eprime();
void se();
void seprime();
void t();
void tprime();
void f();
void relop();
void ao();
void mo();

struct token tkn;
FILE *f1;

void invalid()
{
	printf("~~~~~~~~~~INVALID~~~~~~~~~~\n");
	exit(0);
}

void valid()
{
	printf("~~~~~~~~~~SUCCESS~~~~~~~~~~\n");
	exit(0);
}
```

```
void updatecurrent()
{
	tkn=getNextToken(f1);
}

void prog()
{
	updatecurrent();
	if(strcmp(tkn.lexemeName,"main")==0)
	{
		updatecurrent();
		if(strcmp(tkn.lexemeName,"(")==0)
		{
			updatecurrent();
			if(strcmp(tkn.lexemeName,")")==0)
			{
				updatecurrent();
				if(strcmp(tkn.lexemeName,"{")==0)
				{
					dec();
					slist();
					updatecurrent();
					if(strcmp(tkn.lexemeName,"}")!=0)
						invalid();
				}
				else
					invalid();
			}
			else
				invalid();
		}
		else
			invalid();
	}
	else
		invalid();
}

void dec()
{
	updatecurrent();
	if(strcmp(tkn.lexemeName,"int")==0||strcmp(tkn.lexemeName,"char")==0)
	{
		dtype();
		ilist();
		if(strcmp(tkn.lexemeName,";")==0)
		{
			dec();
		}
		else
			invalid();
	}
```

```
	else
		return;
}

void slist()
{
	if(strcmp(tkn.lexemeName,"id")==0)
	{
		s();
		if(strcmp(tkn.lexemeName,"id")==0)
		{
			slist();
		}
	}
	else
		return;
}

void s()
{
	AS();
	updatecurrent();
	if(strcmp(tkn.lexemeName,";")!=0)
		invalid();
}

void AS()
{
	if(strcmp(tkn.lexemeName,"id")==0)
	{
		updatecurrent();
		if(strcmp(tkn.lexemeName,"=")==0)
		{
			expn();
		}
		else
			invalid();
	}
	else
		invalid();
}

void expn()
{
	se();
	eprime();
}

void se()
{
	t();
	seprime();
```

```
}

void t()
{
	f();
	tprime();
}

void f()
{
	updatecurrent();
	if(strcmp(tkn.lexemeName,"id")!=0&&strcmp(tkn.lexemeName,"num")!=0)
		invalid();
}

void seprime()
{
	if(strcmp(tkn.lexemeName,"+")==0||strcmp(tkn.lexemeName,"-")==0)
	{
		ao();
		t();
		seprime();
	}
	else
		return;
}

void tprime()
{

if(strcmp(tkn.lexemeName,"*")==0||strcmp(tkn.lexemeName,"/")==0||strcmp(tkn.lexemeNa
me,"%")==0)
	{
		mo();
		f();
		tprime();
	}
	else
		return;
}

void eprime()
{

if(strcmp(tkn.lexemeName,"==")==0||strcmp(tkn.lexemeName,"!=")==0||strcmp(tkn.lexeme
Name,"<=")==0||strcmp(tkn.lexemeName,">=")==0||strcmp(tkn.lexemeName,"<")==0||strc
mp(tkn.lexemeName,">")==0)
	{
		relop();
		se();
	}
	else
```

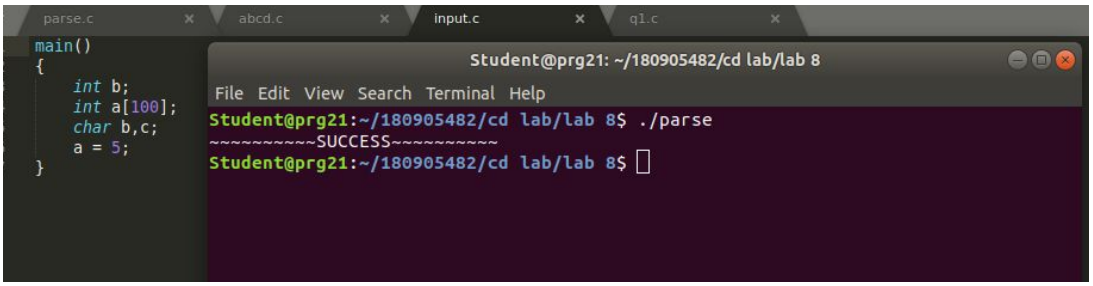
```
		return;
}

void relop()
{
	updatecurrent();

if(strcmp(tkn.lexemeName,"==")!=0&&strcmp(tkn.lexemeName,"!=")!=0&&strcmp(tkn.lexe
meName,"<=")!=0&&strcmp(tkn.lexemeName,">=")!=0&&strcmp(tkn.lexemeName,">")!=0
&&strcmp(tkn.lexemeName,"<")!=0)
		invalid();
}

void ao()
{
	updatecurrent();
	if(strcmp(tkn.lexemeName,"+")!=0&&strcmp(tkn.lexemeName,"-")!=0)
		invalid();
}

void mo()
{
	updatecurrent();

if(strcmp(tkn.lexemeName,"*")!=0&&strcmp(tkn.lexemeName,"/")!=0&&strcmp(tkn.lexeme
Name,"%")!=0)
		invalid();
}

void dtype()
{
	if(strcmp(tkn.lexemeName,"int")!=0&&strcmp(tkn.lexemeName,"char")!=0)
		invalid();
}

void ilist()
{
	updatecurrent();
	if(strcmp(tkn.lexemeName,"id")!=0)
		invalid();
	iprime();
}

void iprime()
{
	updatecurrent();
	if(strcmp(tkn.lexemeName,",")==0)
		ilist();
	else if(strcmp(tkn.lexemeName,"[")==0)
	{
		updatecurrent();
		if(strcmp(tkn.lexemeName,"num")==0)
```

```
                {
                        updatecurrent();
                        if(strcmp(tkn.lexemeName,"]")==0)
                        {
                                updatecurrent();
                                if(strcmp(tkn.lexemeName,",")==0)
                                {
                                        ilist();
                                }
                                else
                                        return;
                        }
                        else
                                invalid();
                }
                else invalid();
        }
        else
                return;
}

void parse()
{
        prog();
        valid();
}

int main()
{
        f1 = fopen("input.c","r");
        if(f1==NULL)
        {
                printf("File does not exist!!!\n");
                exit(0);
        }
        parse();
}
```

OUTPUT:-

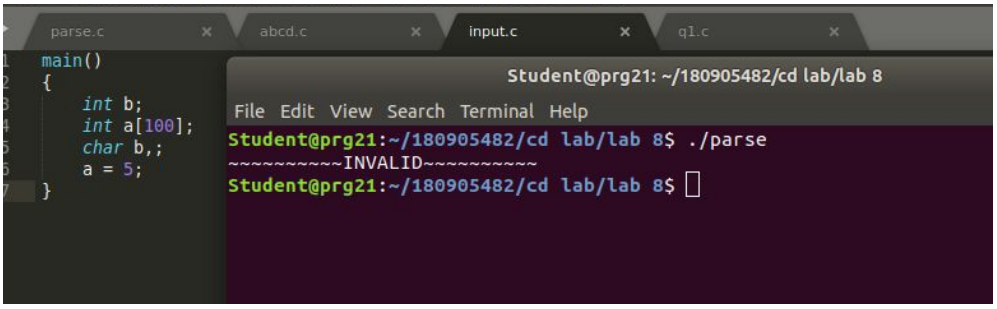
Case 1:-

```
main()
{
        int b;
        int a[100];
        char b,c;
        a = 5;
}
```



Case 2:-

```
main()
{
        int b;
        int a[100];
        char b,;
        a = 5;
}
```



Case 3:-

```
main()
{
        int b;
        int a[100];
        a = 5;
}
```