

**NAME: MEET SHAH**

**USN: 1PE17CS084**

**Design, develop and implement a C/Java program to generate the machine code using Triples for the statement  $A = -B * (C + D)$  whose intermediate code in three-address form:**

**$T1 = -B$**

**$T2 = C + D$**

**$T3 = T1 + T2$**

**$A = T3$**

**Algorithm**

- 1. Declare variables.**
- 2. Declare the file pointers, open one in read mode and other in write.**
- 3. Compare the string for characters +, -, \*, /, =. Print the respective operation in the output file.**
- 4. Close both files.**

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**Program Code:**

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

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

```
#include<ctype.h>
```

```
char op[2],arg1[5],arg2[5],result[5];
```

```
void main()
```

```
{
```

```
FILE *fp1,*fp2;
```

```
fp1=fopen("input.txt","r");
```

```
fp2=fopen("output.txt","w");
```

```
while(!feof(fp1))
```

```
{
```

```
fscanf(fp1,"%s%s%s%s",result,arg1,op,arg2);
```

```
if(strcmp(op,"+")==0)
```

```
{
```

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```
fprintf(fp2, "\nMOV R0,%s",arg1);

        fprintf(fp2, "\nADD R0,%s",arg2);

        fprintf(fp2, "\nMOV %s,R0",result);

    }
```

```
if(strcmp(op,"")==0)

{

    fprintf(fp2, "\nMOV R0,%s",arg1);

    fprintf(fp2, "\nMUL R0,%s",arg2);

    fprintf(fp2, "\nMOV %s,R0",result);

}
```

```
if(strcmp(op,"-")==0)

{

    fprintf(fp2, "\nMOV R0,%s",arg1);
```

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```
fprintf(fp2, "\nSUB R0,%s",arg2);
```

```
    fprintf(fp2, "\nMOV %s,R0",result);
```

```
}
```

```
if(strcmp(op,"/")==0)
```

```
{
```

```
    fprintf(fp2, "\nMOV R0,%s",arg1);
```

```
    fprintf(fp2, "\nDIV R0,%s",arg2);
```

```
    fprintf(fp2, "\nMOV %s,R0",result);
```

```
}
```

```
if(strcmp(op,"")==0)
```

```
{
```

```
    fprintf(fp2, "\nMOV R0,%s",arg1);
```

```
    fprintf(fp2, "\nMOV %s,R0",result);
```

```
}
```

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```
}

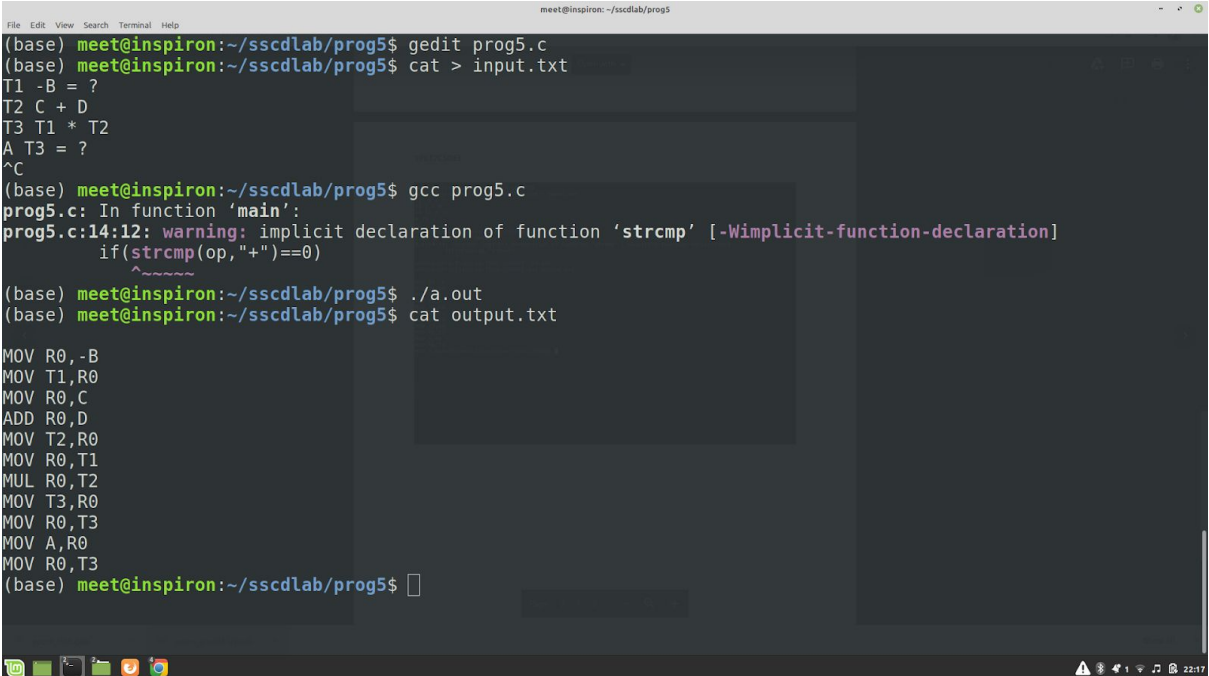
fclose(fp1);

fclose(fp2);

//getch();

}
```

OUTPUT:



```
meet@inspiron: ~/sscdlab/prog5
File Edit View Search Terminal Help
(base) meet@inspiron:~/sscdlab/prog5$ gedit prog5.c
(base) meet@inspiron:~/sscdlab/prog5$ cat > input.txt
T1 -B = ?
T2 C + D
T3 T1 * T2
A T3 = ?
^C
(base) meet@inspiron:~/sscdlab/prog5$ gcc prog5.c
prog5.c: In function 'main':
prog5.c:14:12: warning: implicit declaration of function 'strcmp' [-Wimplicit-function-declaration]
    if(strcmp(op,"+")==0)
       ^
(base) meet@inspiron:~/sscdlab/prog5$ ./a.out
(base) meet@inspiron:~/sscdlab/prog5$ cat output.txt
MOV R0,-B
MOV T1,R0
MOV R0,C
ADD R0,D
MOV T2,R0
MOV R0,T1
MUL R0,T2
MOV T3,R0
MOV R0,T3
MOV A,R0
MOV R0,T3
(base) meet@inspiron:~/sscdlab/prog5$
```

