2CS701 Compiler Construction

Practical 8	
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Aim:

To implement Type checking.

Program:

```c
//To implement type checking
#include<stdio.h>
#include<stdlib.h>
int main()
{
    int n,i,k,flag=0;
    char vari[15],typ[15],b[15],c;
    printf("Enter the number of variables:");
    scanf(" %d",&n); for(i=0;i<n;i++)
    {
        printf("Enter the variable %d:",i);
        scanf(" %c",&vari[i]);
        printf("Enter the variable-type %d (float-f,int-i):",i);
        scanf(" %c",&typ[i]); if(typ[i]=='f') flag=1;
    }
    printf("Enter the Expression(end with $):");
    i=0;
    getchar();
    while((c=getchar())!='$')
    {
        b[i]=c;
        i++;
    }
    k=i;

    for(i=0;i<k;i++)
    {
        if(b[i]=='/')
        {
            flag=1;
            break;
        }
    }
    for(i=0;i<n;i++)
    {
        if(b[0]==vari[i])
        {
            if(flag==1)
            {
                if(typ[i]=='f')
                {
                    printf("\nthe datatype is correctly defined..!\n");
                    break;
```

```
                }
                else
                {
                    printf("Identifier %c must be a float type..!\n",vari[i]);
                    break;
                }
            }
            else
            {
                printf("\nthe datatype is correctly defined..!\n");
                break;
            }
        }
    }
    return 0;
}
```

Output:

```
D:\RUSHI\Nirma University\sem_07\Compiler Construction\Lab>cd "d:\RUSHI\Nirma University\sem_07\Compiler Construction\Lab\" && gcc temp
.c -o temp && "d:\RUSHI\Nirma University\sem_07\Compiler Construction\Lab\"temp
Enter the number of variables:4
Enter the variable 0:A
Enter the variable-type 0 (float-f,int-i):i
Enter the variable 1:8
Enter the variable-type 1 (float-f,int-i):i
Enter the variable 2:c
Enter the variable-type 2 (float-f,int-i):f
Enter the variable 3:d
Enter the variable-type 3 (float-f,int-i):i
Enter the Expression(end with $):A=B*C/D$
Identifier A must be a float type..!
```

```
D:\RUSHI\Nirma University\sem_07\Compiler Construction\Lab>cd "d:\RUSHI\Nirma University\sem_07\Compiler Construction\Lab\" && gcc temp
.c -o temp && "d:\RUSHI\Nirma University\sem_07\Compiler Construction\Lab\"temp
Enter the number of variables:6
Enter the variable 0:A
Enter the variable-type 0 (float-f,int-i):f
Enter the variable 1:B
Enter the variable-type 1 (float-f,int-i):i
Enter the variable 2:C
Enter the variable-type 2 (float-f,int-i):f
Enter the variable 3:D
Enter the variable-type 3 (float-f,int-i):i
Enter the variable 4:E
Enter the variable-type 4 (float-f,int-i):f
Enter the variable 5:F
Enter the variable-type 5 (float-f,int-i):i
Enter the Expression(end with $):A=B*C/D+E*F
$

the datatype is correctly defined..!
```

Conclusion:

From this practical we learnt how to implement Type checking.