

2CS701 Compiler Construction

Lab-8 Task

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Aim: To implement a Type Checker.

Code:

C code:

```
#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 of %c is
correctly defined \n",vari[i]);
                    break;

```

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

Output:

```
Select "D:\nirma\7th sem\2CS701 Compiler Construction\lab\prac 8\TpyeChecker_18bce101\bin\Debug\TpyeChecker_18bce101.exe"
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]: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 Expression(end with $):A=B*C/D$
Identifier A must be a float type

Process returned 0 (0x0)   execution time : 42.889 s
Press any key to continue.
```

```
Select "D:\nirma\7th sem\2CS701 Compiler Construction\lab\prac 8\TpyeChecker_18bce101\bin\Debug\TpyeChecker_18bce101.exe"
Enter the number of variables:3
Enter the variable[0]:x
Enter the variable-type[0](float-f,int-i):i
Enter the variable[1]:y
Enter the variable-type[1](float-f,int-i):i
Enter the variable[2]:z
Enter the variable-type[2](float-f,int-i):i
Enter the Expression(end with $):x=y*z$

The datatype of x is correctly defined

Process returned 0 (0x0)   execution time : 49.836 s
Press any key to continue.
```