19BCE245

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Compiler Construction

Practical 8

Implement a type checker

• 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("[%d.] Enter the variable : ", i+1);
    scanf(" %c", & vari[i]);
    printf("\t Enter the variable-type : (float - f, int
- 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++) {
```

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```
if (b[i] == '/') {
      flag = 1;
      break;
    }
  }
  for (i = 0; i < n; i++) {</pre>
    if (b[0] == vari[i]) {
      if (flag == 1) {
        if (typ[i] == 'f') {
          printf("\n\t> The datatype of %c is correctly
defined\n ",vari[i]);
          break;
        }
        else {
          printf("\t> 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;
}
```

<u>output</u>

```
Enter the number of variables: 4

[1.] Enter the variable : A
        Enter the variable-type : (float - f, int - i): i

[2.] Enter the variable : B
        Enter the variable-type : (float - f, int - i): i

[3.] Enter the variable : C
        Enter the variable-type : (float - f, int - i): f

[4.] Enter the variable : D
        Enter the variable-type : (float - f, int - i): i

Enter the Expression(end with $):A=B*C/D$

> Identifier A must be a float type

② Run Succeeded Time 8 ms Peak Memory 504K

① main ② Spaces: 2 ② Line 13, Column 16
```

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```
Enter the number of variables : 3
[1.] Enter the variable : x
        Enter the variable-type : (float - f, int - i): i
[2.] Enter the variable : y
        Enter the variable-type : (float - f, int - i): i
[3.] Enter the variable : z
        Enter the variable-type : (float - f, int - i): i
Enter the Expression(end with $):x=y*z$

The datatype of x is correctly defined

② Run Succeeded Time 12 ms Peak Memory 504K

⑤ main ② Spaces: 2 ② Line 13, Column 16
```

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