

Ex. No.: 1	Date: 31-12-2025
<b>Title:</b> Identify and Classify Identifiers Using Transition Diagram	
<b>Aim:</b> Implement transition diagram for identifying an identifier and classify whether it is either variable or array or function or structure.	
<b>Algorithm:</b> <b>Step 1:</b> Start <b>Step 2:</b> Read the input string. <b>Step 3:</b> Check the first character. If it is not a letter or _, print <b>Invalid input</b> and stop. <b>Step 4:</b> Check remaining characters one by one. If any character is not a letter, digit, _, [, ], ( or ), print <b>Invalid input</b> and stop. <b>Step 5:</b> Find the length of the input string. <b>Step 6:</b> If the last two characters are [], print <b>Valid identifier: ARRAY</b> . <b>Step 7:</b> Else if the last two characters are (), print <b>Valid identifier: FUNCTION</b> . <b>Step 8:</b> Else print <b>Valid identifier: VARIABLE</b> . <b>Step 9:</b> Stop.	
<b>Program:</b> <pre>#include &lt;stdio.h&gt; #include &lt;ctype.h&gt;  #include &lt;string.h&gt;  int isValidIdentifier(char str[]) {      if (!(isalpha(str[0])    str[0] == '_'))          return 0;      for (int i = 1; str[i] != '\0'; i++) {          if (!(isalnum(str[i])    str[i] == '_'                 str[i] == '['    str[i] == ']'                 str[i] == '('    str[i] == ')'))</pre>	

```
        return 0;    }

    return 1;
}

int main() {

    char input[50];

    int len;

    printf("Enter an identifier: ");

    scanf("%s", input);

    len = strlen(input);

    if (!isValidIdentifier(input)) {

        printf("Invalid input\n");

        return 0;

    }

    if (len > 2 && input[len - 2] == '[' && input[len - 1] == ']') {

        printf("Valid identifier: ARRAY\n");

    }

    /* Check for function */

    else if (len > 2 && input[len - 2] == '(' && input[len - 1] == ')') {

        printf("Valid identifier: FUNCTION\n");

    }

}
```

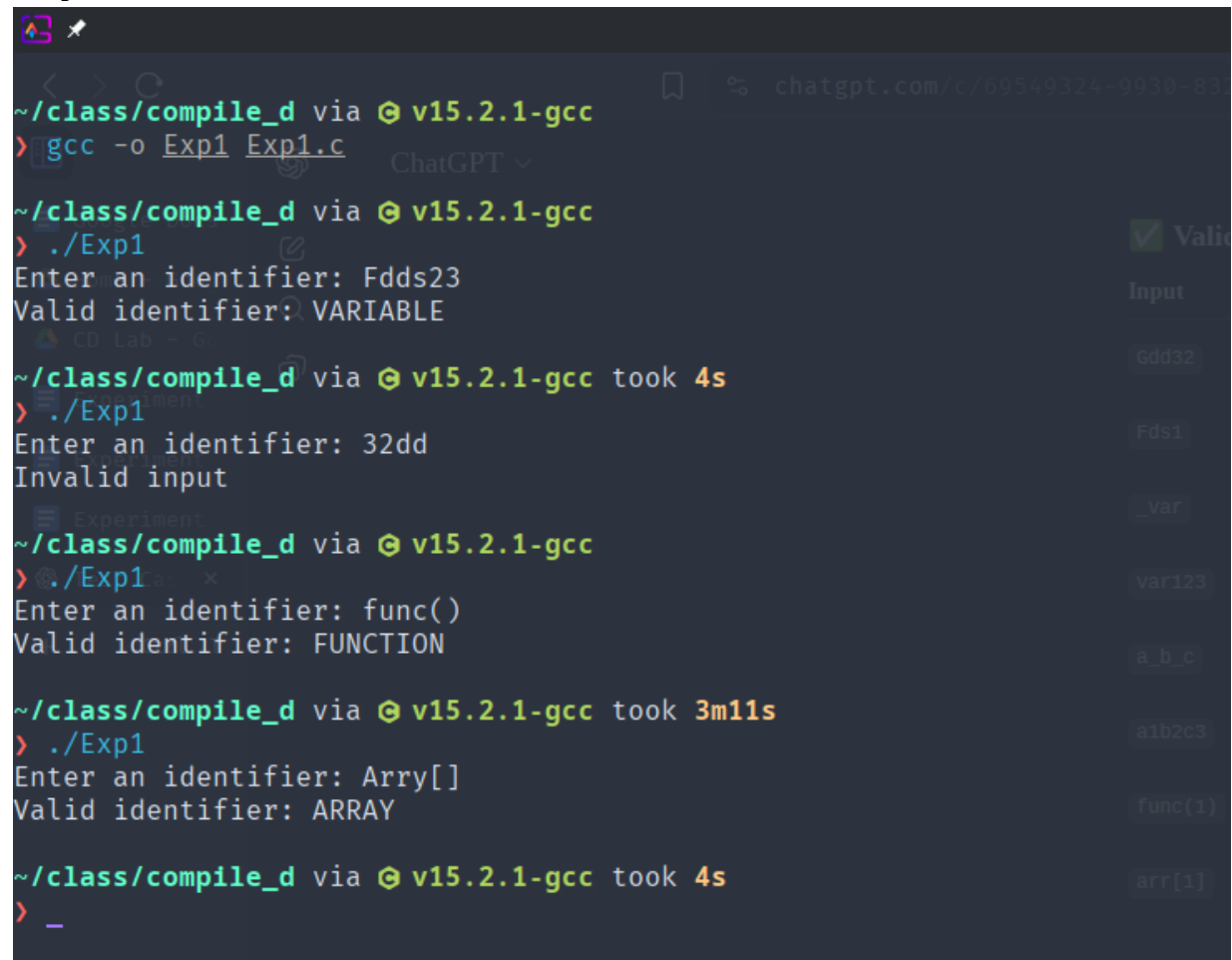
```
else { printf("Valid identifier: VARIABLE\n");  
  
}  
  
return 0;  
  
}
```

**Result:**

Program executed successfully and verified output.

**Output:**

Output Screenshot



```
~/class/compile_d via v15.2.1-gcc  
> gcc -o Exp1 Exp1.c  
  
~/class/compile_d via v15.2.1-gcc  
> ./Exp1  
Enter an identifier: Fdds23  
Valid identifier: VARIABLE  
  
~/class/compile_d via v15.2.1-gcc took 4s  
> ./Exp1  
Enter an identifier: 32dd  
Invalid input  
  
~/class/compile_d via v15.2.1-gcc  
> ./Exp1  
Enter an identifier: func()  
Valid identifier: FUNCTION  
  
~/class/compile_d via v15.2.1-gcc took 3m11s  
> ./Exp1  
Enter an identifier: Array[]  
Valid identifier: ARRAY  
  
~/class/compile_d via v15.2.1-gcc took 4s  
> _
```