

COMPILER DESIGN LAB

LAB ASSIGNMENT – 6

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Q1)

```
#include<stdio.h>
#include<ctype.h>
#include<stdbool.h>
bool check(char str[]){
    if(!isalpha(str[0])){
        return false;
    }
    for(int i=1;str[i]!='\0';i++){
        if(!isalnum(str[i])){
            return false;
        }
    }
    return true;
}
int main(){
    char str[100];
    scanf("%s",&str);
    if(check(str)){
        printf("Yes, it is a valid variable.");
    }
    else{
        printf("No, it is not a valid variable.");
    }
}
```

Output:

```
PS C:\Users\scope1\Desktop\23bce1968> gcc q1.c
PS C:\Users\scope1\Desktop\23bce1968> ./a
id+id*id
No, it is not a valid variable.
PS C:\Users\scope1\Desktop\23bce1968> ./a
hello world
Yes, it is a valid variable.
PS C:\Users\scope1\Desktop\23bce1968> □
```

Q2)

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

int isValidExpression(char *expr) {
    int len = strlen(expr);
    if (len == 0) return 0;

    int expectOperand = 1;
    int i = 0;

    while (i < len) {
        if (expectOperand) {
            if (isalpha(expr[i])) {
                i++;
                while (i < len && isalnum(expr[i])) {
                    i++;
                }
                expectOperand = 0;
            } else {
                return 0;
            }
        } else {
            if (expr[i] == '+' || expr[i] == '-' || expr[i] == '*' || expr[i] ==
'/' ) {
                expectOperand = 1;
                i++;
            } else {
                return 0;
            }
        }
    }

    return !expectOperand;
}

int main() {
    char expr[100];

    printf("Enter an arithmetic expression: ");
    scanf("%s", expr);

    if (isValidExpression(expr)) {
```

```
        printf("%s is a valid arithmetic expression\n", expr);
    } else {
        printf("%s is not a valid arithmetic expression\n", expr);
    }

    return 0;
}
```

Output:

```
PS C:\Users\scope1\Desktop\23bce1968> gcc q2.c
PS C:\Users\scope1\Desktop\23bce1968> ./a
Enter an arithmetic expression: id1+id2*id3
id1+id2*id3 is a valid arithmetic expression
PS C:\Users\scope1\Desktop\23bce1968> ./a
Enter an arithmetic expression: 1id+id2
1id+id2 is not a valid arithmetic expression
PS C:\Users\scope1\Desktop\23bce1968> ./a
Enter an arithmetic expression: a+*b
a+*b is not a valid arithmetic expression
PS C:\Users\scope1\Desktop\23bce1968> █
```