

Online C Compiler - Programiz

Upload to GitHub

deepapreya-h/CNS

+

programiz.com/c-programming/online-compiler/

☆

Verify it's you

Learn DSA the way it should be – with step-by-step code visualization. [Try now!](#)

Programiz C Online Compiler

Programiz PRO

main.c

Share

Run

```
1 #include <stdio.h>
2 #include <string.h>
3 #include <ctype.h>
4 int gcd(int a, int b) {
5     while (b != 0) {
6         int t = b;
7         b = a % b;
8         a = t;
9     }
10    return a;
11 }
12 int modInverse(int a) {
13     a = a % 26;
14     for (int x = 1; x < 26; x++) {
15         if ((a * x) % 26 == 1)
16             return x;
17     }
18     return -1;
19 }
20 char affineEncryptChar(char ch, int a, int b) {
21     if (isalpha(ch)) {
22         ch = toupper(ch);
23         int x = ch - 'A';
24         int e = (a * x + b) % 26;
```

Output

Clear

```
Enter values for 'a' and 'b' (a must be coprime to 26): 5
6
Enter the plaintext (letters only): DEEPA
Encrypted: VAADG
Decrypted: DEEPA

=== Code Execution Successful ===
```

33°C Mostly cloudy

Search

ENG IN

19:42

29-07-2025

Online C Compiler - Programiz

Upload to Github

deepapreya-h/CNS

programiz.com/c-programming/online-compiler/

Verify it's you

Learn DSA the way it should be – with step-by-step code visualization. Try now!

Programiz C Online Compiler

Programiz PRO

main.c

Run

Share

Clear

```
24     int e = (a * x + b) % 26;
25     return e + 'A';
26 }
27 return ch;
28 }
29 char affineDecryptChar(char ch, int a, int b) {
30     if (isalpha(ch)) {
31         ch = toupper(ch);
32         int a_inv = modInverse(a);
33         if (a_inv == -1) return '?';
34         int y = ch - 'A';
35         int d = (a_inv * (y - b + 26)) % 26;
36         return d + 'A';
37     }
38     return ch;
39 }
40 int main() {
41     char plaintext[1000], ciphertext[1000], decrypted[1000];
42     int a, b;
43     printf("Enter values for 'a' and 'b' (a must be coprime to 26): ");
44     scanf("%d %d", &a, &b);
45     if (gcd(a, 26) != 1) {
46         printf("Invalid value for 'a'. It must be coprime to 26.\n");
47         return 1;
48     }
```

Output

```
Enter values for 'a' and 'b' (a must be coprime to 26): 5
6
Enter the plaintext (letters only): DEEPA
Encrypted: VAAOG
Decrypted: DEEPA

=== Code Execution Successful ===
```

33°C Mostly cloudy

Search

ENG IN

19:42 29-07-2025

```
main.c
39 }
40 int main() {
41     char plaintext[1000], ciphertext[1000], decrypted[1000];
42     int a, b;
43     printf("Enter values for 'a' and 'b' (a must be coprime to 26): ");
44     scanf("%d %d", &a, &b);
45     if (gcd(a, 26) != 1) {
46         printf("Invalid value for 'a'. It must be coprime to 26.\n");
47         return 1;
48     }
49     printf("Enter the plaintext (letters only): ");
50     scanf("%[^\\n]", plaintext);
51     for (int i = 0; i < strlen(plaintext); i++)
52         ciphertext[i] = affineEncryptChar(plaintext[i], a, b);
53     ciphertext[strlen(plaintext)] = '\\0';
54     printf("Encrypted: %s\\n", ciphertext);
55     for (int i = 0; i < strlen(ciphertext); i++)
56         decrypted[i] = affineDecryptChar(ciphertext[i], a, b);
57     decrypted[strlen(ciphertext)] = '\\0';
58     printf("Decrypted: %s\\n", decrypted);
59     return 0;
60 }
61
62
```

```
Enter values for 'a' and 'b' (a must be coprime to 26): 5
6
Enter the plaintext (letters only): DEEPA
Encrypted: VAADG
Decrypted: DEEPA
```