

```
#include <stdio.h>
#include <math.h>

- long long power(long long a, long long b, long long p) {
    long long res = 1;
    a = a % p;
    while (b > 0) {
        if (b % 2) res = (res * a) % p;
        b = b / 2;
        a = (a * a) % p;
    }
    return res;
}

- int main() {
    long long P = 23;      // Prime number
    long long G = 5;       // Primitive root

    long long a = 6;        // Private key of A
    long long b = 15;       // Private key of B

    long long A = power(G, a, P);
    long long B = power(G, b, P);

    long long keyA = power(B, a, P);
    long long keyB = power(A, b, P);
```

```
    printf("Public values: P=%lld G=%lld\n", P, G);
    printf("Private keys: a=%lld b=%lld\n", a, b);
    printf("Public keys: A=%lld B=%lld\n", A, B);
    printf("Shared secret key at A: %lld\n", keyA);
    printf("Shared secret key at B: %lld\n", keyB);

    return 0;
}
```

Output

Public values: P=23 G=5

Private keys: a=6 b=15

Public keys: A=8 B=19

Shared secret key at A: 2

Shared secret key at B: 2

==== Code Execution Successful ===