

```
#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 ===