IS EXPERIMENT 5

Code:

```python
def power(a, b, p):
    if b == 1:
        return a
    else:
        return pow(a, b) % p
def main():
    P = int(input("Enter the value of P (a prime number): "))
    G = int(input("Enter the value of G (a primitive root for P): "))
    print("The value of P:", P)
    print("The value of G:", G)
    a = int(input("Enter the private key a for Alice: "))
    print("The private key a for Alice:", a)
    x = power(G, a, P)
    b = int(input("Enter the private key b for Bob: "))
    print("The private key b for Bob:", b)
    y = power(G, b, P)
    ka = power(y, a, P)
    kb = power(x, b, P)

    print("Secret key for Alice is:", ka)
    print("Secret key for Bob is:", kb)


if __name__ == "__main__":
    main()
```

Output:

```
Enter the value of P (a prime number): 13
Enter the value of G (a primitive root for P): 6
The value of P: 13
The value of G: 6
Enter the private key a for Alice: 5
The private key a for Alice: 5
Enter the private key b for Bob: 4
The private key b for Bob: 4
Secret key for Alice is: 3
Secret key for Bob is: 3
```