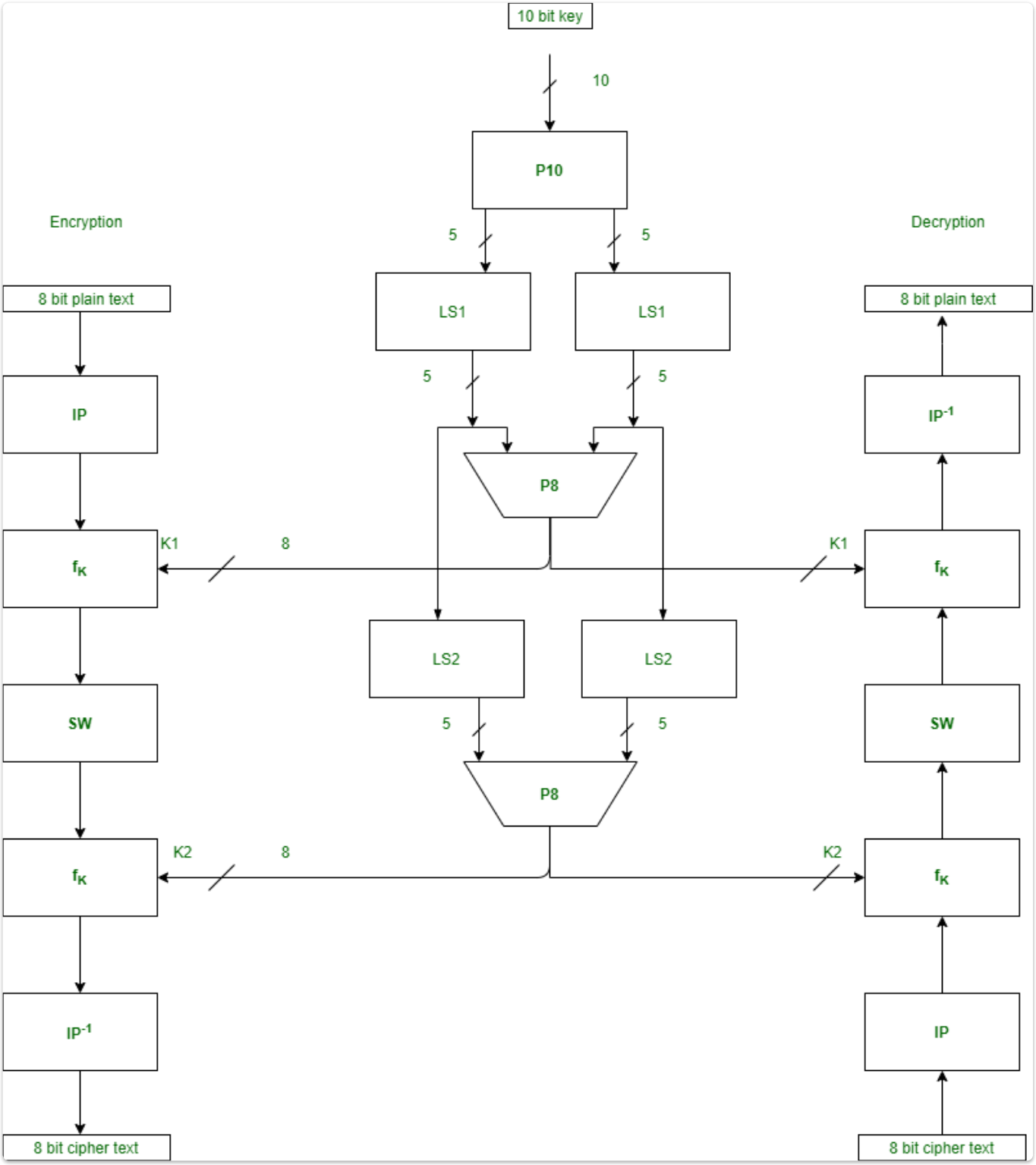
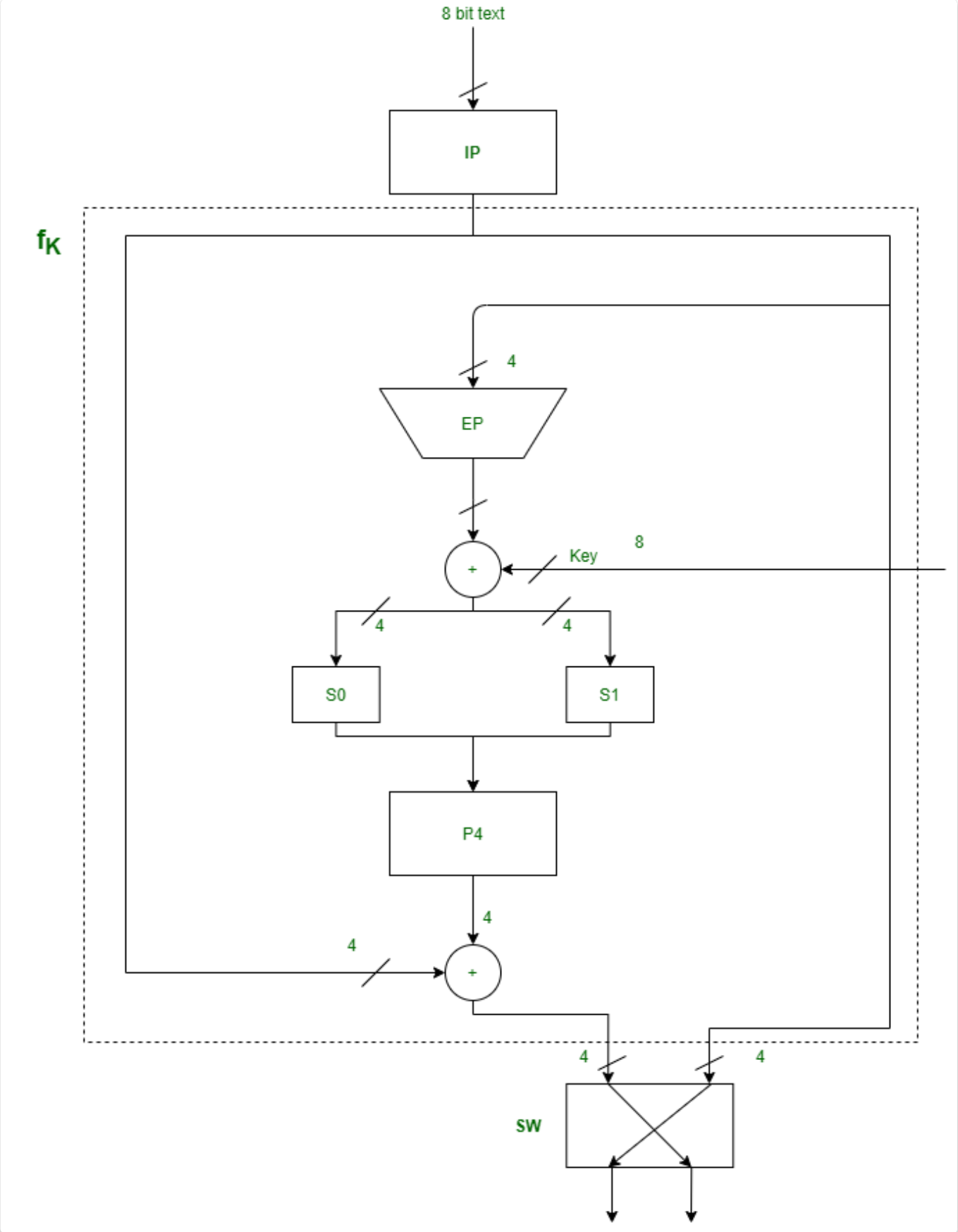
S-DES Process





IP , EP, P-Table, S-Table are given with Plain Text

IP : Initial Permutation
EP : Expansion
P: Permutation
S: Substitution

Plain text : 8 bits

1. Plain Text (8-bits) --- IP (8-bits) --- L (4 bits) and R (4 bits) --- R (4 bits) to EP --- EP gives 8 bits
2. (EP XOR Key) both are 8-bits Give 8-bit ---> L : So and R : S1
3. for both So and S1 : 1st and 4th bits are Row and 2nd and 3rd bit are Column.
4. Find So (2-bits) and S1 (2-bits) from S-Table.
5. If Decimal Value in S-Table then Convert to 2-bit Binary
6. SoS1 give 4 bits
7. Pass SoS1 (4 bits) to P4 (Permutation Table) gives 4-bits
8. Take P4 XOR IP (R: 4-bits)
9. Now We Have Right Side (4-bit Block for Cypher Text)
10. Include IP (L: 4-bits) as Left Side (4-bit Block for Cypher Text)
11. Shift Left and Right Blocks
12. Now we Have 8-bit Cypher Text

Key Generation

Key : 10 bits

1. Key (10-bits) -> P-10 (10-Bits) -> L and R (5-bits Each) : (Perform Single Left Shift at Both)
2. Pass the Shifted L and R --> P-8 --> Round Key 1
3. Perform (Twice - Left Shift) on L-1 and R-1 --> P-8 --> Round Key 2
4. We use Round Keys with (EP XOR Key) Step

That's All Folks