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```
--------------Q1--------------
for(int i =1 i< n ; i++)
{
    //O(1)
}
    n * O(1) = n
    The complexity of the above code is O(n)
```

```
--------------Q2--------------
for(int i=1 ; 2i<=4n ; i++)
{
    //O(1)
}
constant and we also knows that
constant * O(n) = O(n)
 The complexity is O(n)
```

```
 --------------Q3--------------
 for(int i=1 ; i<=n/3 ; i++ )
{
    // O(1)
}
The complexity is O(n)
```

```
28   --------------Q4--------------
29  for(int i=1 ; 3i<=n ; i++ )
30  {
31      // O(1)
32  }
33   constant is 3 so constant * O(n)
34   The complexity is O(n)
35
```

```
36    --------------Q5--------------
37
38   for(int i=1 ; 3^i<=n ; i++ )
39  {
40      // O(1)
41  }
42   The constant is 3^i so constant * O(n)
43   The complexity is O(n)
44
45
```

```
46    --------------Q6--------------
47  for(int i=1 ; i<=n+100 ; i++ )
48  {
49  // O(1)
50  }
51  It will depends on n+100 so the complexity is O(n)
52
53
```

```
54    --------------Q7--------------
55  for(int i=1 ; i^3<=n ; i++ )
56  {
57  // O(1)
58  }
59   The constant is i^3 so constant * O(n) so the complexity is O(n)
60
```

```
   -------------Q8-------------
for(int i=n/2 ; i<=n ; i++ )
{
// O(1)
}
The loop iterate for n/2 so the constant is  1/2
The complexity is O(n)
```

```
    --------------Q9--------------

 for(int i=1 ; i<=n ; i+=10 ){
// O(1)
}
Every time the loop increments 10 steps so
constant + O(n)
The complexity is O(n)
```

```
    --------------Q10--------------
for(int i=n ; i>=1 ; i-- )
{
// O(1)
}
constant - O(n)
The complexity is O(n)
```

```
    --------------Q11--------------
for(int i=1 ; i<=n ; i++ ){
    for(int j=1 ; j<=i^2 ; j++ ){
        // O(1)
    }
}
The time complexity is O(n^2)
```

```
94      --------------Q12--------------
95   for(int i=n ; i>=1 ; i-=5 ){
96      // O(1)
97   }
98   every time steps decremented by 5
99   The time complexity is O(n)
00
```

```
101      --------------Q13--------------
102  for(int i=n ; i>=1 ; i/=2 ){
103      // O(1)
104  }
105  Every time step decremented by 1/2^i
106  The time complexity is O(logn)
107
```

```
108      --------------Q14--------------
109   for(int i=1 ; i<=1 ; i*=2 ){
110  // O(1)
111  }
112  The time complexity is O(1)
113
```

```
114      --------------Q15--------------
115  for(int i=1 ; i<=n ; i++ ){
116      for(int j=1 ; j<=n ; j++ ){
117      // O(1)
118      }
119  }
120  The time complexity is O(n^2)
121
```

```
123      --------------Q16--------------
124   for(int i=1 ; i<=n ; i++ ){
125      for(int j=1 ; j<=i ; j++ ){
126          // O(1)
127      }
128   }
129
130   The time complexity is O(n^2)
131
```

```
132      --------------Q17--------------
133   for(int i=1 ; i<=n ; i++ ){
134      for(int j=1 ; j<=100 ; j++ ){
135      // O(1)
136      }
137   }
138   Second loop runs for constant number of times so Time complexity is O(n)
139
```

```
140      --------------Q18--------------
141   for(int i=1 ; i<=100 ; i++ ){
142      for(int j=1 ; j<=i ; j++ ){
143          // O(1)
144      }
145   }
146
147   First Loop iterates for constant number of times and second loop depends on first loop
148   So, the time complexity is O(1)
149
```

```
150      --------------Q19--------------
151   for(int k=1 ; k<=n ; k++ ){
152      for(int i=1 ; i<=n ; i++ ){
153          for(int j=1 ; j<=n ; j++ ){
154          // O(1)
155          }
156      }
157   }
158
159   The time complexity is O(n^3)
160
```

```
   -------------Q20-------------
for(int k=1 ; k<=n ; k++ ){
   for(int i=1 ; i<=i ; i++ ){
      for(int j=1 ; j<=100 ; j++ ){
         // O(1)
      }
   }
}

First Loop iterates for n number of times and second loop iterates for only one time and
the third loop iterates for constant numbers of times so
The time complexity is O(n)
```

```
   --------------Q21--------------

for(int i=1 ; i<=n ; i++ ){
    for(int j=1 ; j<=i^2 ; j++ ){
        for(int k=1 ; k<=n/2 ; k++ ){
        // O(1)
        }
    }
}

The time complexity is O(n^4)
```

```
   --------------Q22--------------
for(int i=1 ; i<=n ; i++ ){
// O(1)
}
for(int i=1 ; i<=n^2 ; i++ ){
// O(1)
}

Second loop iterates for n^2 times so O(n^2)+ O(n)
The time complexity is O(n^2)
```

```
   --------------Q23--------------
for(int i=1 ; i<=n ; i++ ){
// O(1)
}
The time complexity is O(n)
```

```
  --------------Q24--------------
 for(int i=1 ; i<=n ; i++ ){
    for(int j=1 ; j<=n ; j+=i ){
        // O(1)
    }
}
The time complexity is O(n^2)

```

```
  --------------Q25--------------
for(int i=1 ; i<=n ; i*=2 ){
    for(int j=1 ; j<=i ; j++ ){
        // O(1)
    }
}

The time complexity is O(n^2)

```