

TP 1 - Partie 2 - Exercice 1 - I

```
1  #include <cassert>
2  #include <iostream>
3
4  #define SHOW(arg) std::cout << "Macro SHOW "" #arg """: " << (arg) << '\n';
5
6  int fact_for(int n) {
7      assert(n >= 0);
8      if (n <= 1)
9          return 1;
10     int f{1};
11     for (int i{2}; i <= n; ++i)
12         f *= i;
13     return f;
14 }
15 int fact_while(int n) {
16     assert(n >= 0);
17     if (n <= 1)
18         return 1;
19     int f{1};
```

TP 1 - Partie 2 - Exercice 1 - II

```
20     while (n > 1) {
21         f *= n;
22         --n;
23     }
24     return f;
25 }
26 int fact_do_while(int n) {
27     assert(n >= 0);
28     if (n <= 1)
29         return 1;
30     int f{1};
31     do {
32         f *= n;
33     } while (--n > 1);
34     return f;
35 }
36
37 int main() {
38     SHOW(fact_for(0))
39     SHOW(fact_for(1))
```

TP 1 - Partie 2 - Exercice 1 - III

```
40     SHOW(fact_for(2))
41     SHOW(fact_for(3))
42     SHOW(fact_while(0))
43     SHOW(fact_while(1))
44     SHOW(fact_while(2))
45     SHOW(fact_while(3))
46     SHOW(fact_do_while(0))
47     SHOW(fact_do_while(1))
48     SHOW(fact_do_while(2))
49     SHOW(fact_do_while(3))
50 }
```

TP 1 - Partie 2 - Exercice 1 - IV

Output:

```
1 Macro SHOW "fact_for(0)": 1
2 Macro SHOW "fact_for(1)": 1
3 Macro SHOW "fact_for(2)": 2
4 Macro SHOW "fact_for(3)": 6
5 Macro SHOW "fact_while(0)": 1
6 Macro SHOW "fact_while(1)": 1
7 Macro SHOW "fact_while(2)": 2
8 Macro SHOW "fact_while(3)": 6
9 Macro SHOW "fact_do_while(0)": 1
10 Macro SHOW "fact_do_while(1)": 1
11 Macro SHOW "fact_do_while(2)": 2
12 Macro SHOW "fact_do_while(3)": 6
```