TP 2 - Problem 2 - I

```cpp
#include <iostream>

// Pass-by-reference and returns a reference.
int &f(int &a) {
  // Assign the caller variable.
  a = a + 5;
  return a;
}

// Pass-by-reference and returns a value.
int f1(int &a) {
  // Assign the caller variable.
  a = a + 5;
  return a;
}

// Pass-by-value and returns a reference to a temporary.
int &f2(int a) {
  // Assign a local variable which is a copy of the caller variable.
```

TP 2 - Problem 2 - II

```
20      a = a + 5;
21      return a; // Dangling reference...
22    }
23
24    // Pass-by-value and returns a value.
25    int f3(int a) {
26      // Assign a local variable which is a copy of the caller variable.
27      a = a + 5;
28      return a;
29    }
30
31    int main() {
32      int a = 5;
33      for (int i = 0; i < 2; i++) {
34        std::cout << "f i = " << i << " a = " << a << '\n';
35        f(a)++;
36        std::cout << "f i = " << i << " a = " << a << '\n';
37      }
38      std::cout << f(a);
39      std::cout << '\n';
```

TP 2 - Problem 2 - III

```
40      //        {
41      //  int a = 5;
42      //  for (int i = 0; i < 2; i++) {
43      //    std::cout << "f1 i = " << i << " a = " << a << '\n';
44      //    f1(a)++; error: lvalue required as increment operand
45      //    std::cout << "f1 i = " << i << " a = " << a << '\n';
46      //  }
47      //  std::cout << f1(a);
48      //        std::cout << '\n';
49      //        }
50      {
51        int a = 5;
52        for (int i = 0; i < 2; i++) {
53          std::cout << "f2 i = " << i << " a = " << a << '\n';
54          f2(a)++;
55          std::cout << "f2 i = " << i << " a = " << a << '\n';
56        }
57        std::cout << f2(a);
58        std::cout << '\n';
59      }
```

TP 2 - Problem 2 - IV

```
60      //        {
61      //  int a = 5;
62      //  for (int i = 0; i < 2; i++) {
63      //    std::cout << "f3 i = " << i << " a = " << a << '\n';
64      //    f3(a)++; error: lvalue required as increment operand
65      //    std::cout << "f3 i = " << i << " a = " << a << '\n';
66      //  }
67      //  std::cout << f3(a);
68      //        std::cout << '\n';
69      //        }
70      return 0;
71  }
```

TP 2 - Problem 2 - V

Possible output:

```
1  f i = 0 a = 5
2  f i = 0 a = 11
3  f i = 1 a = 11
4  f i = 1 a = 17
5  22
6  f2 i = 0 a = 5
7  Erreur de segmentation
```