

Chapitre 11

Solutions

11.1 Instructions élémentaires

SOLUTION DE L'EXERCICE 1:

Les variables a,b et c valent respectivement :

- a) 6 6 6
- b) 3 2 2
- c) 6 6 1
- d) 6 2 2
- e) -4 -4 1
- f) 16 6 1 rem : $a = 16 = 2^4$

SOLUTION DE L'EXERCICE 2:

```
#include<iostream>

using namespace std;

int main()
{
    int a, b;                // ou double a,b;

    cin >> a;
    b = a * a;
    b *= b;
    b *= b;
    a *= b * b;
    cout << a << endl;
}
```

SOLUTION DE L'EXERCICE 3:

On utilise une variable de travail c :

```
c = a;
```

```
a = b;  
b = c;
```

SOLUTION DE L'EXERCICE 4:

```
4  
10
```

SOLUTION DE L'EXERCICE 5:

```
6 10
```

SOLUTION DE L'EXERCICE 6:

```
3  
3  
4 5
```

SOLUTION DE L'EXERCICE 7:

```
1) 2  
2) 8 <retour à la ligne> 3  
3) 3
```

SOLUTION DE L'EXERCICE 8:

```
1) <n'imprime rien>  
2) 8 <retour à la ligne> 3  
3) <n'imprime rien>
```

SOLUTION DE L'EXERCICE 9:

```
#include<iostream>  
  
using namespace std;  
  
int main()  
{  
    int a, b, c;  
  
    cin >> a >> b >> c;  
    if (a == b or a == c) {  
        cout << a << endl;  
    } else if (b == c) {  
        cout << b << endl;  
    }  
}
```

SOLUTION DE L'EXERCICE 10:

```
/* Attention: 'a' est une variable entiere !! */
if (a > 0) {
    if (a > 1) {
        if (a > 2) {
            cout << (a - 2) << endl;    // est affiche si a > 2
            // et on affiche des nombres > 0
        } else {
            cout << (a - 1) << endl;    // est affiche si a== 2
            // et on affiche 1
        }
    } else {
        cout << a << endl;            // est affiche si a== 1
        // et affiche 1
    }
} else {
    cout << "Erreur" << endl;    // est affiche si a < = 0
}
}
```

SOLUTION DE L'EXERCICE 11:

```
#include<iostream>

using namespace std;

int main()
{
    int a;

    cin >> a;
    if (a > 0) {
        if (a == 1) {
            cout << "a vaut 1" << endl;
        }
    } else {
        cout << "a est inferieur ou egal a 0" << endl;
    }
}
}
```

SOLUTION DE L'EXERCICE 12:

```
if (a > 2) {
    if (a > 3) {
        if (a == 4)
            cout << "message 1" << endl;
        else
            cout << "message 2" << endl;
        cout << "message 3" << endl;
    }
} else
    cout << "message 4" << endl;
```

SOLUTION DE L'EXERCICE 13:

```
#include<iostream>

using namespace std;

int main()
{
    int a, b, c;

    cin >> a >> b >> c;
    switch (c) {
    case 1:
        cout << (a + b);
        break;
    case 2:
        cout << (a - b);
        break;
    case 3:
        cout << (a * b);
        break;
    case 4:
        cout << (a * a + b * a);
        break;
    default:
        cout << "Erreur de code";
    }
    cout << endl;
}
```

SOLUTION DE L'EXERCICE 14:

```
#include<iostream>

using namespace std;

int main()
{
    int a, b;

    cin >> a >> b;
    cout << (a + b) / 2.0 << endl;
}
```

SOLUTION DE L'EXERCICE 15:

```
#include<iostream>

using namespace std;

int main()
{
    int a, b, c;
```

```
    cin >> a >> b;
    if (a > b) {
        c = a - b;
    } else {
        c = b - a;
    }
    cout << c << endl;
}
```

SOLUTION DE L'EXERCICE 16:

```
#include<iostream>

using namespace std;

int main()
{
    int a, b, c;

    cin >> a >> b;
    c = 2 * b - a;
    cout << c << endl;
}
```

SOLUTION DE L'EXERCICE 17:

```
#include<iostream>

using namespace std;

int main()
{
    int a, b, c;

    cin >> a >> b >> c;

    if ((c < b) and(c < a)) {
        cout << a << b << endl;
    } else if (b < a) {
        cout << a << c << endl;
    } else {
        cout << c << b << endl;
    }
}
```

ou

```
#include<iostream>

using namespace std;

int main()
```

```

{
    int a, b, c;

    cin >> a >> b >> c;
    if ((a <= b) and(a <= c)) {
        cout << b << c << endl;
    } else if ((b <= a) and(b <= c)) {
        cout << a << c << endl;
    } else if ((c <= a) and(c <= b)) {
        cout << a << b << endl;
    }
}

```

SOLUTION DE L'EXERCICE 18:

```

a=2;
b=3;
c=4;
test1=true;
test2=(b>=a) and (c>= b);      -> true
test3=test1 or test2          -> true
arret=test3 and (not test2);   -> false
a+=1;                          -> 3
b-=1;                          -> 2
c-=2;                          -> 2
test1=true;
test2=(b>=a) and (c>=b);      -> false
test3=test1 or test2;         -> true
arret=arret or test2;         -> false

```

SOLUTION DE L'EXERCICE 19:

2 et 7
 3 et 8
 2 et 9
 3 et 10
 5 et 12

SOLUTION DE L'EXERCICE 20:

```

#include<iostream>

using namespace std;

int main()
{
    int a, b, N;

    cin >> a >> b >> N;
    cout << 1 << " " << (a > b and N != 0) << endl;
    cout << 2 << " " << (a <= b or N == 0) << endl;
    cout << 3 << " " << (a <= b and N == 0) << endl;
}

```

```

cout << 4 << " " << (not(a < b) and not(N == 0)) << endl;
cout << 5 << " " << ((a or a)
                    and(a or not a)
                    and(not b or a)
                    and(not b or not a)
                    and(N == 0)) << endl;
cout << 6 << " " << (not(a > b) and N != 0) << endl;
cout << 7 << " " << (not((a > b) and N != 0))
    << endl;
cout << 8 << " " << (not((a > b) or N != 0))
    << endl;
cout << 9 << " " << (not(a > b) or not(N != 0)) << endl;
cout << 10 << " " << (not(a > b) and not(N != 0))
    << endl;
cout << 11 << " " << ((a > b) or N != 0) << endl;
cout << 12 << " " << (not(not a or b) and N == 0) << endl;
}

```

SOLUTION DE L'EXERCICE 21:

```

#include<iostream>

using namespace std;

int main()
{
    int a, b;

    cin >> a >> b;
    cout << (a and b) << endl;
}

```

11.2 Structures itératives

SOLUTION DE L'EXERCICE 22:

Imprime 123456

SOLUTION DE L'EXERCICE 23:

Imprime 123456

SOLUTION DE L'EXERCICE 24:

Imprime 123455