

# Exemples de C

## Programació a Baix Nivell – iTIC

Sebastià Vila-Marta

Escola Politècnica Superior d'Enginyeria de Manresa  
Universitat Politècnica de Catalunya

15 de febrer de 2012

Aquesta obra està subjecta a una llicència Attribution-NonCommercial-ShareAlike 3.0 Spain de Creative Commons. Per veure'n una còpia, visiteu <http://creativecommons.org/licenses/by-nc-sa/3.0/es> o envieu una carta a Creative Commons, 171 Second Street, Suite 300, San Francisco, California 94105, USA.

# Exemple 1

```
#include <stdio.h>

main()
{
    printf("hello world\n");
}
```

## Exemple 2

```
#include <stdio.h>

main()
{
    printf("hello, ");
    printf("world");
    printf("\n");
}
```

## Exemple 3

```
#include <stdio.h>

/* print Fahrenheit–Celsius table for fahr = 0, 20, ..., 300 */
int main()
{
    int fahr, celsius;
    int lower, upper, step;

    lower = 0; /* lower limit of temperature scale */
    upper = 300; /* upper limit */
    step = 20; /* step size */
    fahr = lower;
    while (fahr <= upper) {
        celsius = 5 * (fahr-32) / 9;
        printf("%d\t%d\n", fahr, celsius);
        fahr = fahr + step;
    }
    return 0;
}
```

## Exemple 4

```
#include <stdio.h>

/* print Fahrenheit–Celsius table for fahr = 0, 20, ..., 300;
   floating–point version */
int main()
{
    float fahr, celsius;
    float lower, upper, step;

    lower = 0; /* lower limit of temperature scale */
    upper = 300; /* upper limit */
    step = 20; /* step size */
    fahr = lower;
    while (fahr <= upper) {
        celsius = (5.0/9.0) * (fahr-32.0);
        printf("%3.0f %6.1f\n", fahr, celsius);
        fahr = fahr + step;
    }
    return 0;
}
```

## Exemple 5

```
#include <stdio.h>

/* print Fahrenheit–Celsius table */
int main()
{
    int fahr;

    for (fahr = 0; fahr <= 300; fahr = fahr + 20)
        printf("%3d %6.1f\n", fahr, (5.0/9.0)*(fahr-32));

    return 0;
}
```

## Exemple 6

```
#include <stdio.h>

/* print Fahrenheit–Celsius table */
int main()
{
    for (int fahr = 0; fahr <= 300; fahr = fahr + 20)
        printf("%3d %6.1f\n", fahr, (5.0/9.0)*(fahr-32));

    return 0;
}
```

## Exemple 7

```
#include <stdio.h>
#define LOWER 0 /* lower limit of table */
#define UPPER 300 /* upper limit */
#define STEP 20 /* step size */

/* print Fahrenheit–Celsius table */
int main()
{
    for (int fahr = LOWER; fahr <= UPPER; fahr = fahr + STEP)
        printf("%3d %6.1f\n", fahr, (5.0/9.0)*(fahr-32));
    return 0;
}
```



## Exemple 8

```
#include <stdio.h>

/* copy input to output; 1st version */
int main()
{
    int c;

    c = getchar();
    while (c != EOF) {
        putchar(c);
        c = getchar();
    }
    return 0;
}
```

## Exemple 9

```
#include <stdio.h>

/* copy input to output; 2nd version */
main()
{
    int c;

    while ((c = getchar()) != EOF)
        putchar(c);
}
```

# Exemple 10

```
#include <stdio.h>

/* count characters in input; 1st version */
main()
{
    long nc;

    nc = 0;
    while (getchar() != EOF)
        ++nc;
    printf("%ld\n", nc);
}
```

# Exemple 11

```
#include <stdio.h>
/* count characters in input; 2nd version */

main()
{
    double nc;

    for (nc = 0; getchar() != EOF; ++nc)
        ;
    printf("%.0f\n", nc);
}
```

## Exemple 12

```
#include <stdio.h>
/* count lines in input */

main()
{
    int c, nl;

    nl = 0;
    while ((c = getchar()) != EOF)
        if (c == '\n')
            ++nl;
    printf("%d\n", nl);
}
```

## Exemple 13

```
#include <stdio.h>
#define IN 1 /* inside a word */
#define OUT 0 /* outside a word */

main() { /* count lines, words, and characters in input */
    int c, nl, nw, nc, state;

    state = OUT;
    nl = nw = nc = 0;
    while ((c = getchar()) != EOF) {
        ++nc;
        if (c == '\n')
            ++nl;
        if (c == ' ' || c == '\n' || c == '\t')
            state = OUT;
        else if (state == OUT) {
            state = IN;
            ++nw;
        }
    }
    printf("%d %d %d\n", nl, nw, nc);
}
```

## Exemple 14

```
#include <stdio.h>
/* count digits, white space, others */
main() {
    int c, i, nwhite, nother;
    int ndigit[10];
    nwhite = nother = 0;
    for (i = 0; i < 10; ++i)
        ndigit[i] = 0;
    while ((c = getchar()) != EOF)
        if (c >= '0' && c <= '9')
            ++ndigit[c-'0'];
        else if (c == ' ' || c == '\n' || c == '\t')
            ++nwhite;
        else
            ++nother;
    printf("digits =");
    for (i = 0; i < 10; ++i)
        printf(" %d", ndigit[i]);
    printf(", white space = %d, other = %d\n", nwhite, nother);
}
```

## Exemple 15

```
#include <stdio.h>

int power(int m, int n);

main() /* test power function */
{
    int i;
    for (i = 0; i < 10; ++i)
        printf("%d %d %d\n", i, power(2,i), power(-3,i));
    return 0;
}

/* power: raise base to n-th power; n >= 0 */
int power(int base, int n) {
    int i, p;
    p = 1;
    for (i = 1; i <= n; ++i)
        p = p * base;
    return p;
}
```



## Exemple 16

```
/* power: raise base to n-th power; n >= 0; version 2 */  
int power(int base, int n)  
{  
    int p;  
    for (p = 1; n > 0; --n)  
        p = p * base;  
    return p;  
}
```

## Exemple 17

```
#include <stdio.h>

#define MAXLINE 1000 /* maximum input line length */

int getline(char line[], int maxline);
void copy(char to[], char from[]);

/* print the longest input line */
main() {
    int len, max; /* maximum length seen so far */
    char line[MAXLINE]; /* current input line */
    char longest[MAXLINE]; /* longest line saved here */

    max = 0;
    while ((len = getline(line, MAXLINE)) > 0)
        if (len > max) {
            max = len; copy(longest, line);
        }
    if (max > 0) printf("%s", longest);
}
```

## Exemple 17bis

```

/* getline: read a line into s, return length */
int getline(char s[],int lim) {
    int c, i;

    for (i=0; i < lim-1 && (c=getchar())!=EOF && c!='\n'; ++i)
        s[i] = c;
    if (c == '\n') {
        s[i] = c;
        ++i;
    }
    s[i] = '\0';
    return i;
}

```

```

/* copy: copy 'from' into 'to'; assume to is big enough */
void copy(char to[], char from[]) {
    int i;
    i = 0;
    while ((to[i] = from[i]) != '\0')
        ++i;
}

```