



Level: 1st year of computer science
Course: ADS1

Typical solution TD/TP N° : 03

Academic year: 2024/2025
Chapter 2 : I/O

Exercise 1 : (TD)

Write an algorithm that reads the name and birth year of a person, as well as the current year. Then, it displays the age of that person.

```
Algorithm CalculateAge
Var name: string
    birthYear, currentYear, age : entier
begin
    write("Name: ")
    read (name)
    write ("Year of birth: ")
    read (birthYear)
    write ("Current year: ")
    read (currentYear)
    age ← currentYear - birthYear
    write ("Hello ", name, ", you are ", age, " years old.")
end.
```

Exercise 2: (TP)

Write a C program that converts a lowercase letter into an uppercase letter.

N. B. : the letters are ordered such that: 'A' < 'B' < ... < 'Z' < ... < 'a' < 'b' < ... < 'z'

```
#include <stdio.h>
int main() {
    char c_min, c_maj;
    printf("entrer une lettre minuscule\n");
    scanf("%c", &c_min);
    c_maj = c_min - ('a' - 'A');
    printf("%c in uppercase is %c", c_min, c_maj);
}
```

Exercise 3: (TD/TP)

Write an algorithm and its C program to calculate the average of the analysis module.

<pre>Algorithm avg_ADS1 Var exm, TD, TP, avg: real begin write ("exam: ") read (exm) write ("TD: ") read (TD) write ("TP: ") read (TP) avg ← (exm * 3 + TD + TP) / 5 write ("the average =", avg) end.</pre>	<pre>#include <stdio.h> int main() { float cntr, TD, moy; printf("Contrôle :"); scanf("%f", &cntr); printf("TD:"); scanf("%f", &TD); moy = (cntr * 3 + TD * 2) / 5; printf("la moyenne =%.2f", moy); }</pre>
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Exercise 4: (TD/TP)

Write an algorithm and its C program that receives an angle in degrees, then displays this angle in grades and radians.

N. B. : rad = deg° × π/180 gr = rad × 200/π

<pre>Algorithm angle const pi=3.14 Var deg, rad, gr: réel begin write ("enter an angle in degrees ")</pre>	<pre>#include <stdio.h> int main() { const float pi=3.14; float deg, rad, gr; printf("enter an angle in degrees ");</pre>
--	---

```
read (deg)
rad ← deg *pi/180
gr ← rad * 200/ pi
write (deg, "°=", rad, " rad = ", gr, "
gr")
end.
```

```
scanf("%f",&deg);
rad = deg *pi/180;
gr = rad *200/pi;
printf("%.2f°=%.2f rad =%.2f gr", deg,
rad, gr);
}
```

Exercise 5: (TP)

Write a C program that reads the time in seconds and then displays it in hours, minutes and seconds.

```
#include <stdio.h>
int main() {
    int t, h, m, s;
    printf("enter total time in seconds\n");
    scanf("%d",&t);
    s = t % 60;
    m = t /60 % 60;
    h = t /60 /60
    printf("in %d s there are %d:%d:%d", t, h, m, s);
}
```