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Thème: Fiche de révision en language C

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1   Introduction

```c
# include <stdio.h>
int main()
{
    printf("Programming");
    return 0;
}
```

$$Programming$$

2   Int

```c
# include <stdio.h>
int main()
{
    int testInteger = 5;
    printf("Number = %d", testInteger);
    return 0;
}
```

$$Number = 5$$

3   Float

```c
# include <stdio.h>
int main()
{
    float number1 = 13.5;
    double number2 = 12.4;
    printf("number1 = %f\n", number1);
    printf("number2 = %lf", number2);
    return 0;
}
```

$$number1 = 13.500000$$
$$number2 = 12.400000$$

4   Characters

```c
#include <stdio.h>
int main()
{
    char chr = 'a';
    printf("character = %c.", chr);
    return 0;
}
```

$$character = a$$

5   Arithmetic Operators

```c
// Working of arithmetic operators
#include <stdio.h>
int main()
{
    int a = 9,b = 4, c;

    c = a+b;
    printf("a+b = %d \n",c);
    c = a-b;
    printf("a-b = %d \n",c);
    c = a*b;
    printf("a*b = %d \n",c);
    c = a/b;
    printf("a/b = %d \n",c);
    c = a%b;
    printf("Remainder when a divided by b = %d \n",c);

    return 0;
}
```

$$a + b = 13$$
$$a - b = 5$$
$$a * b = 36$$
$$a/b = 2$$
$$Remainder when a divided by b = 1$$

6   Flow Control

```c
// Program to relate two integers using =, > or < symbol

#include <stdio.h>
int main() {
    int number1, number2;
    printf("Enter two integers: ");
    scanf("%d %d", &number1, &number2);

    //checks if the two integers are equal.
    if(number1 == number2) {
        printf("Result: %d = %d",number1,number2);
    }

    //checks if number1 is greater than number2.
    else if (number1 > number2) {
        printf("Result: %d > %d", number1, number2);
    }

    //checks if both test expressions are false
    else {
        printf("Result: %d < %d",number1, number2);
    }
```

```
    return 0;
}
```

$$Enter\ two\ integers: 12$$

$$23$$

$$Result: 12 < 23$$

7 for Loop

```c
// Print numbers from 1 to 10
#include <stdio.h>

int main() {
  int i;

  for (i = 1; i < 11; ++i)
  {
    printf("%d ", i);
  }
  return 0;
}
```

```c
// Print numbers from 1 to 5

#include <stdio.h>
int main()
{
    int i = 1;

    while (i <= 5)
    {
        printf("%d\n", i);
        ++i;
    }

    return 0;
}
```

```c
// Program to calculate the sum of a maximum of 10 numbers
// If a negative number is entered, the loop terminates

# include <stdio.h>
int main()
{
    int i;
    double number, sum = 0.0;

    for(i=1; i <= 10; ++i)
    {
        printf("Enter a n%d: ",i);
        scanf("%lf",&number);
```

```
        // If the user enters a negative number, the loop ends
        if(number < 0.0)
        {
            break; // or continue
        }

        sum += number; // sum = sum + number;
    }

    printf("Sum = %.2lf",sum);

    return 0;
}
```

$$Enter \ an1 : 2.4$$
$$Enter \ an2 : 4.5$$
$$Enter \ an3 : 3.4$$
$$Enter \ an4 : -3$$
$$Sum = 10.30$$

8 Functions

```
// add two integers
#include <stdio.h>
int addNumbers(int a, int b);          // function prototype

int main()
{
    int n1,n2,sum;

    printf("Enters two numbers: ");
    scanf("%d %d",&n1,&n2);

    sum = addNumbers(n1, n2);          // function call
    printf("sum = %d",sum);

    return 0;
}

int addNumbers(int a, int b)           // function definition
{
    int result;
    result = a+b;
    return result;                     // return statement
}


//No arguments passed but a return value
#include <stdio.h>
int getInteger();
```

```c
int main()
{
    int n, i, flag = 0;

  // no argument is passed
    n = getInteger();

    for(i=2; i<=n/2; ++i)
    {
        if(n%i==0){
            flag = 1;
            break;
        }
    }

    if (flag == 1)
        printf("%d is not a prime number.", n);
    else
        printf("%d is a prime number.", n);

    return 0;
}

// returns integer entered by the user
int getInteger()
{
    int n;

    printf("Enter a positive integer: ");
    scanf("%d",&n);

    return n;
}


// Static Variable
#include <stdio.h>
void display();

int main()
{
    display();
    display();
}
void display()
{
    static int c = 1;
    c += 5;
    printf("%d  ",c);
}
```

9   Arrays

```c
float y[2][4][3];
int mark[] = {19, 10, 8, 17, 9};
int mark[5] = {19, 10, 8, 17, 9};
int c[][3] = {{1, 3, 0}, {-1, 5, 9}};

// print the first element of the array
printf("%d", mark[0]);

// print the third element of the array
printf("%d", mark[2]);

// print ith element of the array
printf("%d", mark[i-1]);

// Program to find the average of n numbers using arrays

#include <stdio.h>
int main()
{
    int marks[10], i, n, sum = 0, average;

    printf("Enter number of elements: ");
    scanf("%d", &n);

    for(i=0; i<n; ++i)
    {
        printf("Enter number%d: ",i+1);
        scanf("%d", &marks[i]);

        // adding integers entered by the user to the sum variable
        sum += marks[i];
    }

    average = sum/n;
    printf("Average = %d", average);

    return 0;
}
```

10   Pointers

```c
int* pc, c;
c = 5;
pc = &c;
printf("%d", *pc);    // Output: 5

// Call by reference
#include <stdio.h>
void swap(int *n1, int *n2);

int main()
{
```

```
    int num1 = 5, num2 = 10;

    // address of num1 and num2 is passed
    swap( &num1, &num2);

    printf("num1 = %d\n", num1);
    printf("num2 = %d", num2);
    return 0;
}

void swap(int* n1, int* n2)
{
    int temp;
    temp = *n1;
    *n1 = *n2;
    *n2 = temp;
}
```

$$num1 = 10$$
$$num2 = 5$$

11   Programming Strings

```
#include <stdio.h>
int main()
{
    char name[20];
    printf("Enter name: ");
    scanf("%s", name);
    printf("Your name is %s.", name);
    return 0;
}
```

$$Enter name : Manelle Nouar$$
$$Your name is Manelle.$$

12   Preprocessor

```
#include <stdio.h>
#define PI 3.1415

int main()
{
    float radius, area;
    printf("Enter the radius: ");
    scanf("%f", &radius);

    // Notice, the use of PI
    area = PI*radius*radius;

    printf("Area=%.2f",area);
    return 0;
}
```