

Pointeurs

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Ce document est un sujet de TD pour les étudiants de L1 S1 de l'UFR math-info. Il rassemble les 3 exemples vus en cours sur les pointeurs C et 2 exercices sur les pointeurs.

Exemple 1

En supposant un `printf("a = %d, b = %d, *p = %d.\n", a, b, *p);` après chaque ligne, donner la sortie du bloc suivant.

```
int a = 1; int * p = &a; int b = *p;
a = 2;
b = 3;
p = &b;
a = 4;
b = 5;
```

Exemple 2

En supposant un `printf("a = %d, b = %d, *p = %d, *q = %d.\n", a, b, *p, *q);` après chacune des 3 dernières lignes, donner la sortie du bloc suivant.

```
int a = 1; int b = 2;
int * p = &a;
int * q = p;
a = 3;
b = *q + 10;
```

Exemple 3

Donner la sortie du bloc suivant.

```
int a = 1; int b = 2;
int * p = &a; int * q = &b;
printf("a = %d, b = %d.\n", a, b);
printf("*p = %d, *q = %d.\n", *p, *q);
printf("&a = %p, &b = %p.\n", &a, &b);
printf(" p = %p, q = %p.\n", p, q);
```

Exercice 1

Donner la sortie du programme suivant.

```
int main() {
    int a = 1; int * p = &a; int b = *p;
    printf("1: a = %d, b = %d, *p = %d.\n", a, b, *p);
    a *= 3;
    printf("2: a = %d, b = %d, *p = %d.\n", a, b, *p);
    b += 1;
    printf("3: a = %d, b = %d, *p = %d.\n", a, b, *p);
    int * q = &b;
    printf("4: a = %d, b = %d, *p = %d, *q = %d.\n", a, b, *p, *q);
    *q *= (*p)++;
    printf("5: a = %d, b = %d, *p = %d, *q = %d.\n", a, b, *p, *q);
    *q += ++(*p);
    printf("6: a = %d, b = %d, *p = %d, *q = %d.\n", a, b, *p, *q);
    p = q;
    printf("7: a = %d, b = %d, *p = %d, *q = %d.\n", a, b, *p, *q);
    q = &a;
    printf("8: a = %d, b = %d, *p = %d, *q = %d.\n", a, b, *p, *q);
    return(0);
}
```

Exercice 2

Donner la sortie du programme suivant.

```
int main() {
    int a = 2; int * p = &a; int b = *p;
    printf("1: a = %d, b = %d, *p = %d.\n", a, b, *p);
    a *= 5;
    printf("2: a = %d, b = %d, *p = %d.\n", a, b, *p);
    b += 1;
    printf("3: a = %d, b = %d, *p = %d.\n", a, b, *p);
    int * q = &b;
    printf("4: a = %d, b = %d, *p = %d, *q = %d.\n", a, b, *p, *q);
    p = q;
    printf("5: a = %d, b = %d, *p = %d, *q = %d.\n", a, b, *p, *q);
    q = &a;
    printf("6: a = %d, b = %d, *p = %d, *q = %d.\n", a, b, *p, *q);
    (*q)++;
    printf("7: a = %d, b = %d, *p = %d, *q = %d.\n", a, b, *p, *q);
    q = NULL;
    printf("8: a = %d, b = %d, *p = %d, *q = %d.\n", a, b, *p, *q);
    return(0);
}
```