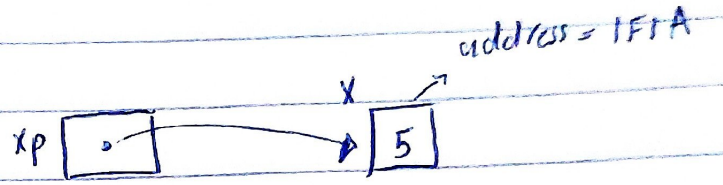
pointer:- a variable that contains an address of another variable

How to declare a pointer: data type* pointer name;

How can a function return more than output to caller:-

By useing pointer.

```
int *xp;
int x = 5;
xp = &x;
```



① printf("%p", xp); ⇒ (1F1A) ⇐ x لأن address يطبع

② printf("%p", &x); ⇒ (1F1A) ⇐ يطبع

③ printf("%d", x); ⇒ (5) يطبع

④ printf("%d", *xp);

العملي وين xp بتأشر واطبعلي محتوى يلي بتأشر عليه.

write a C program to simulate a calculater

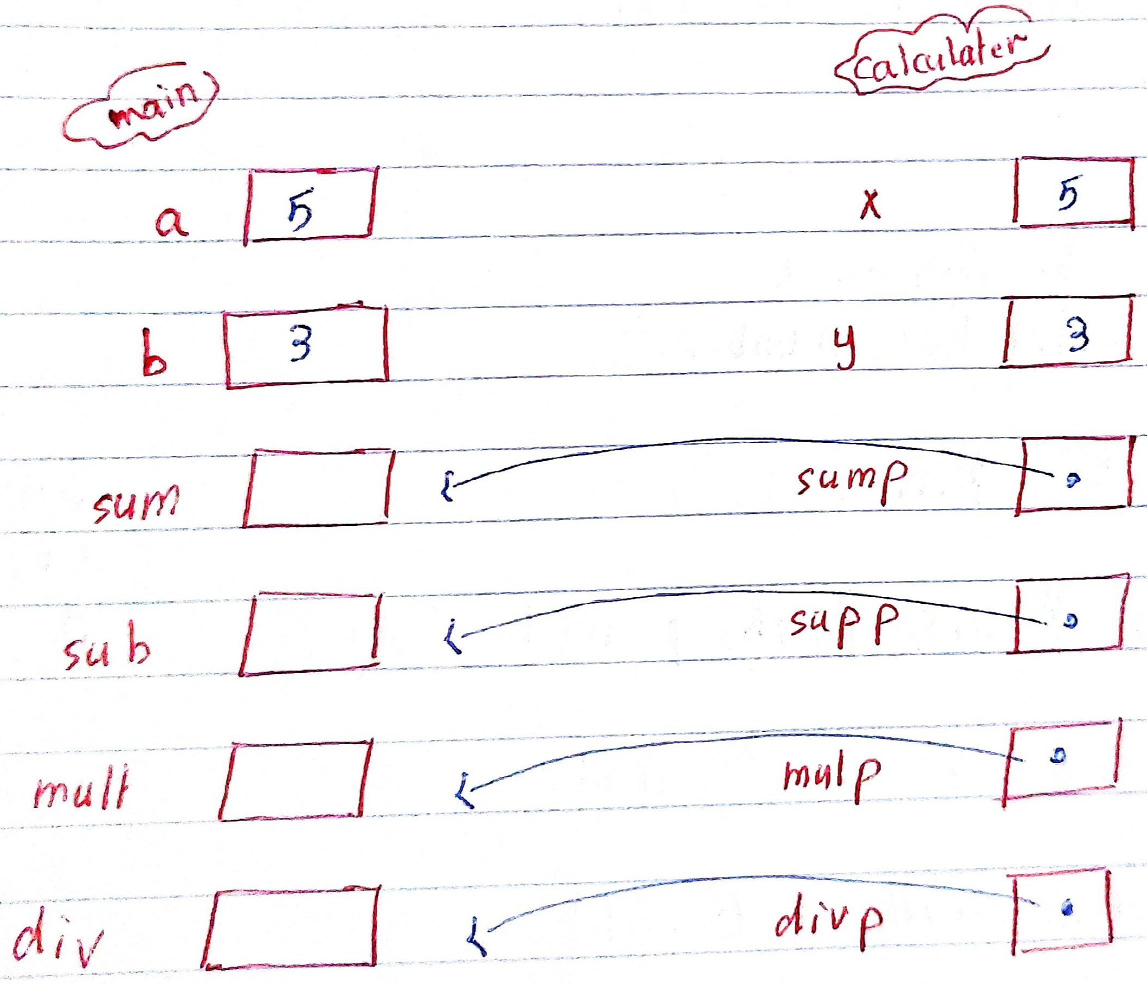
(addition, subtraction, multiplication, division)

for two number, use one function to perform the task and return result to main program.

do for the pointer

```
#include <stdio.h>

void calculater(int x, int y, int *sump, int *subp
                int *mulp, int *divp);

int main(){

int a, b, sum, sub, div, mult;
printf("please enter two numbers");

scanf("%d %d", &a, &b);

calculater(a, b, &sum, &sub, &mult, &div);

printf("addition result = %d", sum);

printf("subtraction result = %d", sub);

printf("multiplication result = %d", mult);

printf("division result = %d", div);

return 0;
```

```
void calculater( int x, int y, int *sump, int *subp
                 int *mulp, int *divp){

    *sump = x+y;   // المعنى sump روح ع بتأشر وحطي بمحتواها x+y
    *subp = x-y;
    *mulp = x*y;
    *divp = x/y;
}
```



write a c program to find How many 200's, 100's 50's, 10's, 5's, 2's, 1's in a certain amount of mony, use one function?

```
#include <stdio.h>

void cashier(int amount, int *twohp, int *Onehp
int *fiftyp, int *twentyp, int *tenp, int *fivep, int *twop
int *onep);

int main() {

int amount;
int twoh, oneh, fifty, twenty, ten, five, two, one;

printf("please enter amount");

scanf("%d", &amount);

cashier(amount, &twoh, &oneh, &fifty, &twenty, &ten
        &five, &two, &One);

printf("%d %d %d %d %d %d %d %d\n",
        twoh, oneh, fifty, twenty, ten, five, two, one);

return0;
}
```

```
void cashier(int amount, int* twohp, int *onehp- ... ) {

  *twohp = amount/200;
  if(amount/200 != 0) {
  amount = amount - 200;
  else
  amount = amount % 200;
  }

*onehp = amount / 100;
 if ( amount/100 != 0) {
  amount = amount - 100;
  else
  amount = amount % 100;
 }

        .
        .
        .
        .
        .
        .
        .
        .
        .
        .
        .

* twop = amount / 2;
  if (amount/2 != 0) {
  amount = amount - 2;
  else
  amount = amount % 200;
  }

* onep = amount / 1;
  if ( amount/1 != 0) {
amount = amount - 1;
                                amount = amount % 1
                                }
```

pointers :-

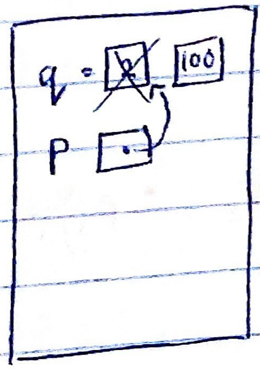
① Determine the output of the following :-

```c
int main( ){
int q=2;
int *p;
p = &q;
*p=100;

printf("%d\n", q);
printf("%p\n", p);
printf("%d\n",*p);
printf("%p\n", &q);
printf("%p\n", &p);
return 0;
}
```

اطبعلي P وين بتأشر

{Not} ⇒ %P to print the address in Hex.

main

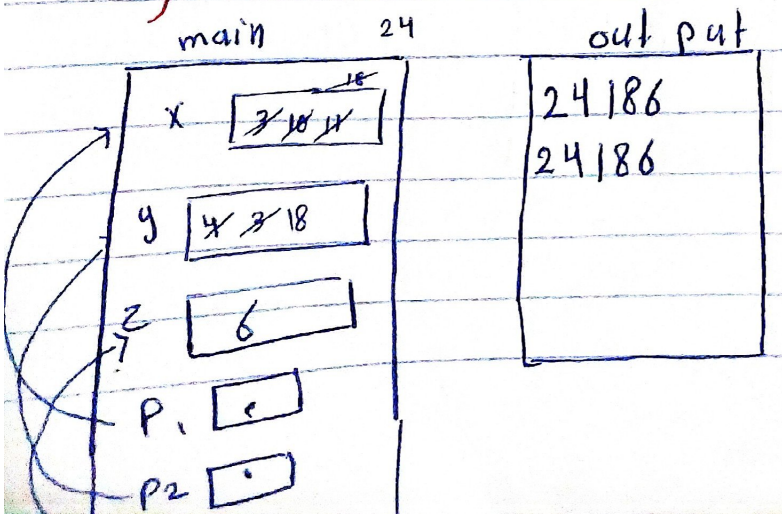


out put -

100
&q → (address of q)
100
&q → (address of q)
&p → (address of p)

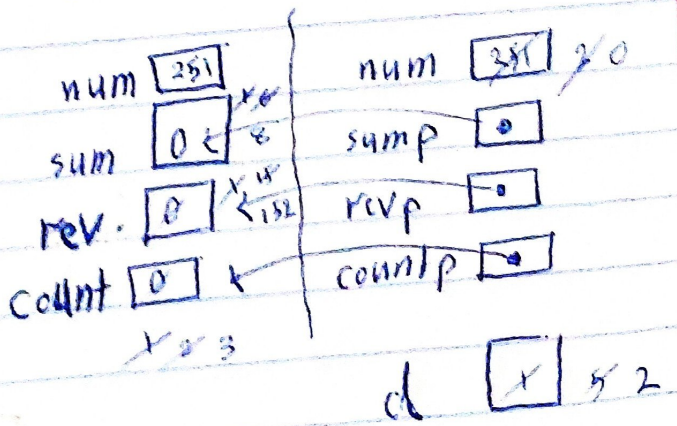
② int main( ) {

```
int x = 3, y = 4, z = 6;
int *p1, *p2, *p3;

p1 = &x;
p2 = &y;
p3 = &z;

*p1 = *p2 + *p3;

(*p1)++;

(*p2)--;

*p1 = (*p2) * (*p3);

*p2 = (*p2) * (*p3);

x = y + z;

printf("%d %d %d\n", x, y, z);

printf("%d %d %d", *p1, *p2, *p3);

return 0;
}
```



write a function to return :-
(1) find the sum of digits.
(2) find the sum of its digits.
(3) find the reverse.

```
#include <stdio.h>
void num_f (int num, int *sump, int *revp,
int *countp);

int main(){
int num, sum, count, rev;
printf("please enter the number");
scanf("%d", &num);

num_f(num, &sum, &count, &rev);
printf("sum = %d\n", sum);

printf("count = %d\n", count);

printf("rev = %d\n", rev);
return 0;
}
void num_f (int num, int *sump, int *revp, int *countp){
*sump = 0;
*countp = 0;
*revp = 0;
while (num != 0){
int d = num % 10;
++(*countp);
```



```
    *sump = *sump + d;
    *revp = (*revp * 10) + d;
    num = num / 10;
  }
}
```