



Questions on Double Pointer



Question 1

```
main() {  
  
    int x, y, *p1, **p2;  
    x = 100;  
    y = 200;  
  
    p1 = &x;  
    p2 = &p1;  
  
    printf("%d ", **p2);  
  
    *p2 = &y;  
  
    printf("%d ", **p2);  
  
}
```





Question 2

- Example
 - `int k, x[3] = {5, 7, 9};`
 - `int *myptr, **ourptr;`
 - `myptr = x;`
 - `ourptr = &myptr;`
 - `k = *myptr; // k=?`
 - `k = (**ourptr) + 1; // k=?`
 - `k = *(*ourptr + 1); // k=?`





Question 3:

GATE 2008

```
int f(int x, int *py, int **ppz)
{
    int y, z;
    **ppz += 1; z = **ppz;
    *py += 2; y = *py;
    x += 3;
    return x+y+z;
}

void main()
{
    int c, *b, **a;
    c = 4; b = &c; a = &b;
    printf("%d", f(c, b, a));
}
```





Question 4

D. What is the content of array A after executing the following code snippet?

```
long A[3] = {1, 2, 3}
long *p;
long **q;
p = A;
p++;
q = &p;
p++;
(*p) = (**q) * 2;
```

1. 1 2 3
2. 1 2 4
3. 1 2 6
4. 1 4 3
5. 1 4 6
6. None of the above



Question 5

```
void inc_ptr(int **h)
{
    *h = *h + 1;
}

int A[3] = {50, 60, 70};
int* q = A;
inc_ptr(&q);
printf("*q = %d\n", *q);
```





Question 6

```
int x[] = { 2, 4, 6, 8, 10 };  
int *p = x;  
int **pp = &p;  
(*pp)++;  
(*(*pp))++;  
printf("%d\n", *p);
```

Result is:

A: 2

B: 3

C: 4

D: 5



Question 7

```
#include <stdio.h>
```

```
void foo(int **p)
{
    int j = 11;
    *p = &j;
    printf("%d", **p);
}
```

```
int main()
{
    int i = 10;
    int *p = &i;
    foo(&p);
    printf("%d", *p);
    return 0;
}
```





Question 8

```
int i=10;  
int *p;  
int **q;  
int ***r;  
p=&i;  
*p=15;  
q=&p;  
**q=20;  
r=&q;  
***r=(*p) + 1;  
printf("%d",i);
```





Question 9

Consider the following code:

```
int a = 4;
int b = 6;
int c = 9;
int* p = &a;
int* q = p;
p = &b;
a++;
(*q)++;
b = *q * 2;
c = *q + *p;
```

What are the final values of a,b,c,p, and q?





Question 10

- The correct prototype of a function `fun` that takes pointer to a `float`, a pointer to a pointer to a `char` and returns a pointer to a pointer to an `int` is (circle one answer):

`int **fun(float**, char**);`

`int *fun(float*, char*);`

`int **fun(float*, char**);`

`int ***fun(*float, **char);`





Question 11

```
void ubswap(int **a, int **b) {  
    int* temp = *a;  
    *a = *b;  
    *b = temp;  
}  
  
int main() {  
    int x = 1, y=9;  
    int* u = &x; int* v = &y;  
    int** a = &u; int** b = &v;  
    ubswap(a, b);  
    return 0;  
}
```

ASSES

which pairs of variables in main are swapped? Check all that apply.

☐ x and y ☐ u and v ☐ a and b ☐ None of the above

<https://cse.buffalo.edu/~hungngo/classes/2014/Fall/250/assignments/sample-midterm1-sol.pdf>





Answer

```
void ubswap(int **a, int **b) {
    int* temp = *a;
    *a = *b;
    *b = temp;
}

int main() {
    int x = 1, y=9;
    int* u = &x; int* v = &y;
    int** a = &u; int** b = &v;
    ubswap(a, b);
    return 0;
}
```

which pairs of variables in main are swapped? Check all that apply.

☐ x and y ☒ u and v ☐ a and b ☐ None of the above





Question 12

```
int main(void) {
    int arr[3];

    for (int i = 0; i < 3; i++) {
        arr[2 - i] = 2*i;
        printf("arr[%u]=%u\n", 2 - i, 2 * i);
    }

    int *curr = &arr[0];
    int *next = NULL;

    curr = aFunction( &curr, &next);

    printf("*curr=%d\n", *curr);
    printf("*next=%d\n", *next);

    for (size_t i = 0; i < 3; i++) {
        printf("arr[%u]=%d\n", i, arr[i]);
    }
}
```

```
int *aFunction(int **p, int **q)
{
    printf("**p=%d\n", **p);

    (*p)++;
    *q = *p + 1;

    printf("**p=%d\n", ** p);
    printf("**q=%d\n", ** q);

    **q = **p - (*p)[-1];

    int **temp = p;
    p = q;
    q = temp;

    return *q - 1;
}
```





Questions on char array and strings



Question 13:

```
#include<stdio.h>
int main()
{
    char string[]="BADGERS";
    char *ptr = string;
    *ptr = *ptr+2;
    ptr=ptr+2;
    printf("%c",*ptr);
    ptr--;
    printf("%c",*ptr);
    ptr=string;
    printf("%c",*ptr);
    return 0;
}
```





Question 14:

An array named `str` has been declared in the following manner.

```
char str[6] = "cat";
```

What is the correct way to print the string "cat" using the `printf` function?

- (a) `printf("%c", str);`
- (b) `printf("%c", &str);`
- (c) `printf("%s", str);`
- (d) `printf("%c%c%c", str);`



Question 15:



```
#include <stdio.h>

void main(void)
{
    char test_str[50] = "1010_fighting";
    char * str_ptr = &test_str[2];

    while(*str_ptr != '\0')
    {
        printf("%c", *(str_ptr++));
    }
}
```

- (a) 0_fighting
- (b) 10_fighting
- (c) 1
- (d) 1010_fighting





Question 16: Make Diagram for both declarations

```
char amessage[] = "now is the time";    /* an array */
```

```
char *pmessage = "now is the time";    /* a pointer */
```



pmessage:  `now is the time\0`

amessage:  `now is the time\0`





Question 17:

```
#include<stdio.h>
```

```
char* myFunc(char *ptr){  
    ptr+=3;  
    return ptr;  
}
```

```
int main()  
{  
    char *x, *y;  
  
    x = "HELLO";  
    y = myFunc(x);  
    printf("%s", y);  
}
```

What will print when the sample code above is executed?

- a. $y = \text{HELLO}$
- b. $y = \text{ELLO}$
- c. $y = \text{LLO}$
- d. $y = \text{LO}$





Question 18: GATE 2019

Consider the following C program:

```
#include <stdio.h>
int main() {
    int arr[]={1, 2, 3, 4, 5, 6, 7, 8, 9, 0, 1, 2, 5},
    *ip=arr+4;
    printf("%d\n", ip[1]);
    return 0;
}
```

The number that will be displayed on execution of the program is _____





Question 19: GATE 2011

What does the following fragment of C program print?

```
char c[] = "GATE2011";  
char *p = c;  
printf("%s", p + p[3] - p[1]);
```

- A. *GATE2011*
- B. *E2011*
- C. *2011*
- D. *011*





Question 20:

5. If you write the following line of code:

```
char * mystr = "Hello!";
```

What will happen if you do `mystr[0] = 'J';`?

- a) The program will seg fault.
- b) The compiler will give an error.
- c) `mystr` will have the value `Jello!`.
- d) `mystr` will be unchanged.

<https://adhilton.pratt.duke.edu/sites/adhilton.pratt.duke.edu/files/u37/midterm-s18-soln.pdf>





Question 21:

```
void changeit(char *value) {
    char *p;
    for (p = value; *p != '\0'; p++)
        *p = ++(*p);
    printf("%s", value);
}

int main()
{
    char carr[] = "Monday";
    changeit(carr);
}
```





Questions on 2D array





Question 22

```
int x[3][4] = {{1,2,3,4}, {5,6,7,8}, {9,10,11,12}};
```

Which of the following print "7" ?

- A. `printf("%d", x[1][2]);`
- B. `printf("%d", (*(x+1)+2));`
- C. `printf("%d",>(*x+6));`
- D. `printf("%d", (*(x+2)-2));`





Question 23: GATE 2015

What is the output of the following C code? Assume that the address of x is 2000 (in decimal) and an integer requires four bytes of memory.

```
int main () {  
    unsigned int x [4] [3] =  
        {{1, 2, 3}, {4, 5, 6}, {7, 8, 9}, {10, 11, 12}};  
    printf ("%u, %u, %u", x + 3, *(x + 3), *(x + 2) + 3);  
}
```

- A. 2036, 2036, 2036
- B. 2012, 4, 2204
- C. 2036, 10, 10
- D. 2012, 4, 6





Question 24:

GATE 2008

```
int main ()
{
    int i, j;
    char a [2] [3] = {{ 'a', 'b', 'c' }, { 'd', 'e', 'f' }};
    char b [3] [2];
    char *p = *b;

    for (i = 0; i < 2; i++) {
        for (j = 0; j < 3; j++) {
            *(p + 2*j + i) = a [i] [j];
        }
    }
}
```




Question 25

Which cell of a is modified by the assignment in the following code:

```
double a[3][3];  
double *p = &a[1][1];  
*(p+2)=7;
```

☐ a[2][2]

☐ a[2][0]

☐ a[0][2]

☐ a[1][2]

