

Exercise # 10

1. Write a program which will input integers into two arrays a[4][5] and b[4][5]. Add the corresponding elements and store in c[4][5] and print this array.
2. Write a program to initialize an array of pointers to character strings. Sort it in either ascending or descending order according to the user's response.
3. Distinguish between a pointer array & multi-d array?
4. What is the output:

```
main()
{
    int x' *y' **z;
    x = 1;
    y = &x;
    z = &y
    **z = 5;
    printf("%d, x);
}
```

5. What will be displayed when following program is executed:

```
#include <stdio.h>
main()
{
    char *string[5] = {"abc", "anu", "gin", "rum", "pie", };
    char **pp;
    pp = string;
    printf("%u\n", pp);
    printf("%s\n", string[0]);
    printf("%u\n", &string[0]);
    printf("%c\n", **pp);
    printf("%s\n", *pp);
}
```

6. Differentiate between:

- a) int abc[5][10]; and int *b[5];
- b) int *fn(int); and int (*fn)(int)

7. Explain the following:

```
int **abc;
void (*abc)(int);
```

8. What will be the output in the following case:

```
void abc(void);
```

```
main()
{
    void (*abcptr)(void);
    abcptr = abc;
    abc();
    (*abcptr());
}
void abc(void)
{
    printf("MMMUT_ITCA\n");
}
```

Exercise # 9

Part A

1. **State True / False:**

- a) if p and q are pointers to `Int`, then $p < q$ and $p > q$ is valid.
- b) `int *p;`
`p = 10030;` is ok
- c) if “pa” and “pb” are pointers to elements of the same array then all arithmetic operations are possible on “pa” and “pb”
- d) Pointer variables cannot be initialized.

Part B

1. Distinguish between a pointer and an array?
2. What is the output of the following:

```
main ( )
{
    static char a[ ] = "rccchd";
    char *pa;
    pa = a + 6;
    while(--pa >= a)
        putchar(*pa);
    putchar('\n');
}
```

3. `int a[4] = {10, 20, 30, 40}, *p;`

`p = a;`

What is meant by:

- a) `p++`
 - b) `*p`
 - c) `*++p`
4. Write a function, `fact(int i, int *j)`, to find the factorial of an integer, `i`, and store it in `*j`.
 5. Write a function `int letterCnt(char *p)` which returns count of all alphabets in a character string.
 6. Write a function using pointers to copy a string to another string.
 7. Write a function using pointers that appends one string to another.
 8. Write a function `int strcmp(s, t)` using pointers to compare two strings and return -1 if string “s” is less than “t”, 1 if string “s” is greater than string “t” and 0 if string “s” is equal to string “t”.
 9. Write a function `int pos(char *str, char c)` which accepts a string and a character as argument and returns the position of the character `c` in the string `str` else returns 0.

Exercise # 11

Part A

1. State True / False :
 - a) A structure can be a member of another structure.
 - b) Array within a structure is allowed.
 - c) The structure tag is mandatory.
 - d) A structure cannot be initialized.

Part B

1. How does an array differ from structure?
2. What is a structure tag and what is its purpose?
3. Define a structure which stores the name of a student, his roll number, and marks in three subjects for total of 10 students. Write a program to print the roll number and name of student who gets the maximum and the one who gets the minimum marks. Also display the Average marks of each student.
4. Write a function to swap two dates using a structure. Use this function to swap an array of dates.

Exercise # 12

Part A

Q 1 : State True / False:

- a) The “typedef” does not allocate a variable but associates an identifier with a particular data type.
- b) An array of bit fields is legal.
- c) The address operator can be used with bit fields.
- d) Bit fields can be of type float.

Part B

Q 1: unsigned exits:3;

What is meaning of above statement (inside a struct)?

Q 2: Explain the advantages of:

- a) Using bit fields
- b) Using type def

Q3: What will be the output if we print the string, “welcome to RCC”, using:

- a) %125s e) %20.10
- b) %-125s f) %-20.10s
- c) %20s g) %.12s
- d) %-20s

Q4: what is the result of the following:

- a) i = 25;
 printf(“%4d”, i);
- b) i = 625;
 printf(“%2d”, i);
- c) f = 8.3528
 printf(“%7.2fd”, f);

Q5: If the contents of “a” is binary 10010001 and “b” is 11100010, what will be the result of:

- a) a & b
- b) a | b
- c) a >> 3
- d) a << 3
- e) a ^ b

Q6: What does the following program do?

```
#include <stdio.h>
main()
{
    int mask = 1;
    int n;

    while(scanf(“%d”, &n) != EOF)
        if(n & mask)
            printf(“Odd\n”);
        else
            printf(“Even\n”);
}
```