# MINOR ASSIGNMENT-06
## Practical Programming with C (CSE 3544)

**Publish on:** 07-12-2024                                 **Submission on:** 09-12-2024
**Course Outcome:** $CO_4$           **Program Outcome:** $PO_5$           **Learning Level:** $L_5$

## Problem Statement:

Working with different storage classes and Experiment with one of the powerful tool, recursion, in problem solving and programming.

## Assignment Objectives:

To learn about storage classes and get the idea of how function calls itself to solve computational problem.

## Answer the followings:
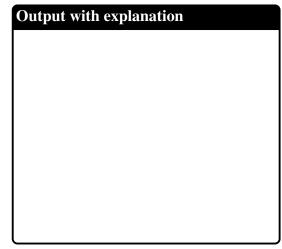
1. Consider the following ANSI C program;

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

What is the output of the above program?

**Output with explanation**

2. Consider the following ANSI C program;

```c
#include <stdio.h>
int a, b, c = 0;
void prtFun(void);
int main()
{
        static int a = 1; /* Line 1 */
        prtFun( );
        a+=1;
        prtFun( );
        printf("\n %d %d ", a, b);
        return(0);
}
void prtFun(void)
{
        static int a = 2; /* Line 2 */
        int b = 1;
        a + = ++b;
        printf(" \n %d %d ", a, b);
}
```

What is the output of the above program?

**Output with explanation**

3. Consider the following ANSI C program;

```
#include <stdio.h>
int a, b, c = 0;
void prtFun(void);
int main()
{ auto int a = 1;  /* Line 1 */
        prtFun( );
        a+=1;
        prtFun( );
        printf("\n %d %d ", a, b);
        return(0);
}
void prtFun(void)
{ register int a = 2;  /* Line 2 */
        int b = 1;
        a + = ++b;
        printf(" \n %d %d ", a, b);
}
```

What is the output of the above program?

| Output with explanation |
| --- |
|  |

4. What is printed by the following ANSI C program?                    **[GATE 2005]**

| Output with explanation |
| --- |
|  |

```
#include<stdio.h>
int f(int n, int k){
        if(n==0) return 0;
        else if(n%2) return f(n/2, 2*k)+k;
        else return f(n/2, 2*k)-k;
}
int main(){
        printf( "%d",f(20,1));
        return 0;
}
```

5. What is printed by the following ANSI C program?                    **[GATE 2007]**

| Output with explanation▼ |
| --- |
|  |

```
#include<stdio.h>
void f(int n){
        if(n<=1){
                printf("%d",n);
        }
        else{
                f(n/2);
                printf("%d",n%2);
        }
}
int main()
{
        f(173);
        return 0;
}
```

6. Consider the following C function:                                     **[GATE 2004]**

```
int f(int n)
{
   static int i = 1 ;
   if (n >=5) return n;
   n = n+1;
   i++;
   return f(n);
}
```

The value returned by **f(1)** is
(A) 5 (B) 6 (C) 7 (D) 8

**Show the execution pattern▼**

7. Consider the following C program                                      **GATE-2019**

```
#include<stdio.h>
int r(){
  static int num=7;
  return num--;
}
int main()
{
        for(r();r();r())
           printf("%d ", r());
        return 0;
}
```

Which one of the following values will be displayed on ex-
ecution of the program? (A) 41 (B) 52 (C) 63 (D) 630
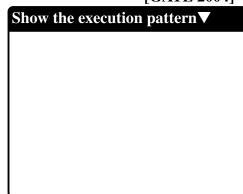
**Trace the execution and it's output▼**

8. The integer value printed by the ANSI-C program given below is ;

```
int funcp(){
  static int x = 1;
  x++;
 return x;
}
int main(){
  int x,y;
  x = funcp();
  y = funcp()+x;
  printf("%d\n", (x+y));
  return 0;
}
```
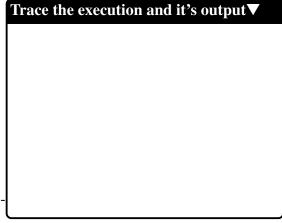
**Output▼**

9. Consider the following C program

Find the error in the program with proper rea-
soning

```
#include<stdio.h>
int main(){
        register int a =10;
        int *ptr = NULL;
        ptr = &a;
        *ptr = 5;
        printf("%d",*ptr);
        return(0);
}
```
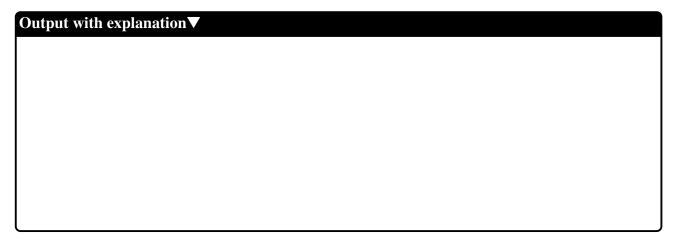
**Output▼**

10. Consider the following C function;

```
file1.c
---------------
extern in count;
void write_extern(){
        count +=2;
}
```

```
file2.c
---------------
#include<stdio.h>
#include "file1.c"
int count = 5;
int main(){
        write_extern();
        write_extern();
        printf("%d\n", count);
        return(0);
}
```

Find the output if "**file2.c**" is compiled and executed:

**Output with explanation▼**

11. Write the output of the following program;

```
#include<stdio.h>
int i=5;
int main()
{
        extern int j;
        printf("\ni=%d \nj=%d",i,j);
        int j=10;
        return 0;
}

int j =10;
```

**Output▼**

12. Write a program to find the sum of an array elements using recursion.

**Program and Output▼**

13. Write a program to print "**n**" Fibonacci numbers using recursion.[N.B: The program format should be as follows]

```
#include <stdio.h>
... print_fibo(......){
        ...
        ...
}
... main(){
        // get data from user
        print_fibo(...); // to print elements
}
```

**Program and Output▼**