Name: _____ Roll No: __Page1:1-4, pag2:5-9, Page3:10-16____
CS1109/CS1110 (Introduction to Computing)
Quiz Exam2   27th Oct 2025 8AM-8.50AM   TotalMarks:34
Write Answers in the space provided in the Question Paper.
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1. **[2Marks] What will be the output of following code snippet**

```
int i, A=5;
for(i=0;i<5;i++){
    int A=20; A++; printf("%d ", A);
}
printf("\n %d ", A);
```

21 21 21 21 21
5

2. **[2 Marks] Write name of the actual parameter and formal parameter of the following code snippet.**

```
float sqr(float A);
int main(){
   float W=10.0;
   printf("Sqare of %f=%f",W,sqr(W));
   return 0;
}
float sqr(float B){  return B*B;}
```

B is formal parameter
W is actual parameter

3. **[3 Marks] Add two line codes to print number time Fib function is already called for each invocation of the Fib function.**
```
int Fib(int n){
static int CallCount=0;
CallCount++; printf("Fib Already Called %d Times",CallCount);
if (n <= 1) return 1;
 return Fib(n-1)+Fib(n-2);
}
int main(){
  printf(" Fib 10=%d", Fib(10));
 return 0;
}
```
4. **[3 Mark] Write the equivalent recursive code for the following code**
```
//Assume you have an initialized array A of size n, and Sum=0;
for(i = 0; i < n; i++) Sum += A[i];
ANY ONE of the followings
   1. int SumRec(int A[],int n){ if(n==0)return 0;
          return A[n-1]+SumRec(A,n-1);}
   2. int SumTailRec(int A[], int i, int n){
      if (i==n) return 0; return A[i]+SumTailRec(A,i+1,n);
      }
      //Call as S=SumTailRec(A,0,n);
   3. int SumDiv2(int A[], int left, int right){ if(left==right) return A[left];
      int mid=(left+right)/2; return SumDiv2(A,left,mid)+SumDiv2(A,mid+1, right);
      }
      //Call as Sum = sumDiv2(A, 0, n - 1);
```

5. **[2 Marks] What is the purpose of the following code**
   ```
   fseek(fp, -20, SEEK_END);
   ```

   Move the file pointer 20 bytes backward **from the** end of the file**.**

6. **[5 Mark] Write a recursive code to find value of nth Fibonacci number. Your code should compute the nth Fibonacci number in linear (or O(n)) steps. No marks for code of exponential time complexity.**

```
int fibTailRec(int n, int a, int b) {
   if (n == 0 )return a;
   if (n == 1)  return b;
   return fibTailRec(n - 1, b, a + b);
}
```

```
int Fib(int n){
if(n<=1) return n;
 if( F[n]!=0 ) return F[n];
      return Fib(n-1)=Fib(n-2);
}
int F[n];//initialize to 0
for(i=0;i<n;i++) F[i]=0;
C=Fib(n);
```

7. **[1 Mark] What will happen when the strcat function called with destination with less allocated space than required.**
   ```
   char  dst[10]="hello";
   strcat(dst, "today is a great day");
   ```
   Runtime Error/Segmentation Fault/Data Corruption

8. **[2 Marks] What will be the output of following code snippet.**

   ```
   char str1[] =  "abcde mytime";
   char *str2 = "xxxxx xxxxx";
   strncpy(str1, str2,5);
   printf("%s \n",str1);
   ```

   xxxxx mytime

9. **[2 marks] Write the equivalent code of the following code snippet using printf function.**
   char buff[100];
   sprintf(buff, "Square root of %f=%f\n", 10.0, sqrt(10.0));
   puts(buff);

printf("Square root of %f=%f\n\n", 10.0, sqrt(10.0));

//puts add an extra newline to string

10. **[3 Marks] Add some lines of code in the following code to receive 5 numbers in the command line argument of the program and print their summation. Example $./a.out 45 67 3 7 78**

```
int main(int argc, char *argv[]){
int i, Sum=0;
if(argc<6) { printf("less args..\n");exit(1);}
for(i=1;i<6;i++)
    Sum=Sum+atoi(argv[i]);
printf("\n Sum is: %d\n", Sum);
    return 0;
}
```

11. **[1 Mark] What will be output of the following code snippet**

```
printf("%d", strlen("Hello World"));
```
11

12. **[1 Marks] For fopen function in C. What will happen if the file "test.txt" is already exist in the same directory.**
```
FILE *fptr;
fptr= fopen ("test.txt","w");
```
File will be open with overwritten mode. Earlier content of the file "test.txt" will be erased

13. **[2 Marks] Write one line code to read 20 integer using fread from a file in binary mode with file pointer fp to an integer array A[20];**

fread(A, sizeof(int), 20, fp);

14. **[2 Marks] Define a user defined data type _3DPoint with three float members x, y and z. Using struct and typedef. After that we should be able to declare variable like this: _3DPoint A, B, C[45];**
typedef struct _3DPoint {
**   float x,y,z;**
}_3DPoint;

_3DPoint A, B, C[45];

15. **[1 Marks] What is the difference between a Structure and a Union in C with respect to memory allocation?**
Structure:**Every member gets its own space → larger memory which is Sum of sizes of all members, All members exist simultaneously,**
Union: **All members share the same space, Maximum size among all members → memory-saving, Only one member is valid at a time**

16. **[2 Marks]Write the benefits of separating the storing and the organizing of data in typical system. Is it beneficial to store an array of pointer objects instead of an array of objects?**
(a)Flexibility, reusability, efficiency, scalability: It is better
(b)   Less movement of large data, good for large size objects, required less contagious memory, memory efficiency for variable size objects/image.

Rough Sheet