

**Manipal University Jaipur**  
**CS 1001 Problem Solving Using Computers**  
**B.Tech (First Year), Semester II,**  
**Session Jan 2023 – May 2023**  
**Assignment III**

**Date of Submission: 12<sup>th</sup> May, 2023, Mode : Hard Copy**

- Q1. Implement the following function in 'C'. Write a driver main function that calls the getLength function.
- ```
int getLength(char *p)
{
    /* This function returns the length of the string pointed out by pointer p. */
}
```
- Q2. Implement a recursive function that receives a 1-D array of type 'int' having 'N' elements as parameters and returns the highest value.
- Q3. Implement the following function in C
- ```
int isPalindrome(int N)
{
    /* This method returns 1 if N is a Palindrome Number. A palindrome number has equal value of from both sides. For Example, 7, 77, 707, 8008 are all palindrome numbers. */
}
```
- Q4. Implement the recursive version of getLength() function as mentioned in Q1.
- Q5. Consider a 1-Dimensional array named 'Data' of type int as 'int Data[5] = { 101, 156, 789, 123, 165};'. Suppose the compiler allocates 32-bit base-address for this array as 'AFFFFFF00'.  
*[Note: each address letter/digit corresponds to 4-bits e.g. A as 1010 (Decimal 10), F – 1111 (Decimal 15) etc. Assume compiler allocates 4 bytes for integer datatype].*  
Using this information, predict the output of the following 'C' statements in Hexadecimal Form.
- (i) printf("%x", Data+2);
  - (ii) printf("%x", \*Data);
  - (iii) printf("%x", \*(Data) + 1);
  - (iv) printf("%x", \*(Data+1));
- Q6. Implement the following functions in C
- ```
void concat(char *c1, char *c2)
{
    /* This function concatenates the string pointed out by c2 at the end of the string pointed out by c1. */
}
```
- Q7. Write a program in C which performs the following tasks sequentially
1. Declares 1-D array named 'Data' of size 100. Also declare two variables named 'N' and 'value' of type int.
  2. Reads 'N' elements into array 'Data'.
  3. Reads the values of variable 'value'.
  4. Deletes all occurrences of 'value' from 'Data'
  5. Prints the updated values of array 'Data'.
- Q8. Define a Structure named 'Box' with members as (i) 'length' of type double, (ii) 'width' of type double, (iii) 'height' of type double, (iv) 'color' of type string with length 10 and (v) 'price' of type double.  
Declare two variables named 'b1', 'b2' of type Struct Box.  
Read the values of all attributes of 'b1', 'b2' from user and display it on screen