# RV University

## School of Computer Science and Engineering

### B.Tech (H) Degree Examination 2023-2024

**Semester** : 1st Semester

**Course Code** : CS1000

**Course Title** : Fundamentals of Programming with C

**Duration** : 1 Hour

**Max. Marks: 20**

**Instructions to students (If any):**

1. All questions are compulsory and must be answered.

2. Attempt all questions in sequence. Assume missing data, if any, suitably.

3. Electronic devices, including mobile phones, smartwatches etc., are strictly prohibited during the exam. Any violation of this rule will be considered malpractice and reported to the student disciplinary committee.

4. Please adhere to the syntax of the language; failure to do so will result in a deduction of marks.

5. No restroom breaks are permitted during the examination.

| Q. No. | Questions | Marks |
|---|---|---|
| 1. | Write a program in C to **print all distinct elements** in an array. The program should prompt the user to input the desired number of elements in the array, say $n$, and then the $n$ values, i.e. the contents of an array.<br><br>For example, if the user specifies the number of elements as **5** and the contents as {**1 4 2 2 1**}, then the program will output **1 4 2**. | 6 |
| | | |
| 2. | You are an avid reader who enjoys keeping track of the books you've read. Create a program to manage your reading list consisting of $N$ books, storing the **title of each book along with the number of times you've read it.** | 6 |

Your program should accomplish the **functions** for each of the following tasks using the **array of structures as input**:

a. **Display Read Books**: Displays all the books you've read along with the number of times you've read each book.

b. **Display Unread Books**: Displays only those books that you have not read yet.

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3. Determine the output of the following program for the sequence of 15 input values as **2 4 6 0 1 9 5 4 7 0 1 2 3 4 5**. Based on the output obtained, state the **purpose for designing this program**.

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```c
1. #include<stdio.h>
2. #define MAX 5
3. int getIndx(int i, int j)
4. {  if(j == 0)     return i;
5.    else             return (getIndx(i,j-1) + MAX - j);
6. }
7. int main()
8. {  int i, j, k = 0, size = (MAX*(MAX+1))/2, a[size];
9.    for(i = 0; i < size; i++)
10.       scanf("%d", &a[i]);
11.   for(i = 0; i < MAX; i++)
12.   {  for(j = 0; j < MAX; j++)
13.      {  if(i <= j)
14.         {  printf("%d ", a[k]);  k++; }
15.         else
16.             printf("%d ",a[getIndx(i,j)]);
17.      }
18.      printf("\n");
19.   }
20.   return 0;
21. }
```