

INTERNATIONAL INDIAN SCHOOL, RIYADH
COMPUTER SCIENCE
WORK SHEET - II TERM

CLASS: XII

Questions:

1. a) Write a Get1From2() function in C++ to transfer the content from two arrays FIRST[] and SECOND[] to array ALL[]. The even places (0,2,4,...) of array ALL[] should get the content from the array FIRST[] and odd places(1,3,5,...) of the array ALL[] should get the content from array SECOND[].

Example:

If the FIRST[] array contain

30,60,90

And the SECOND[] array contain

10,50,80

The ALL[] array should contain

30,10,60,50,90,80

- b) An array T[50][20] is stored in the memory along the column with each of the element occupying 4 bytes, find out the base address and address of element T[30][15], if an element T[25][10] is stored at the memory location 9800.

- c) Write a function QUEDEL() in C++ to display and delete an element in a dynamically allocated Queue containing nodes of the following given structure:

struct NODE

```
{    int Itmemo;
    char Iteamname[20];
    NODE *Link; };
```

- d) Define a function SWAPARR() in C++ to swap (interchange) the first row elements with the last row elements, for a two dimensional integer array passed as the argument of the function.

Example: If the two dimensional array contains

5	6	3	2
1	2	4	9
2	5	8	1
9	7	5	8

After swapping of the content of first row and last row, it should be as follows:

9	7	5	8
1	2	4	9
2	5	8	1
5	6	3	2

- e) Convert the following infix expression to its equivalent postfix expression showing stack contents for the conversion:

$$A+B^*(C-D)/E$$

2. a) Write a function in C++ to combine the contents of two equi-sized arrays A and B by adding their corresponding elements as the formula $A[i]+B[i]$; where value i varies from 0 to N-1 and transfer the resultant content in the third same sized array C.

- b) Write a function in C++ which accepts an integer array and its size as arguments and exchanges the values of first half side elements with the second half side elements of the array.

E.g. If the array contains values as 2, 4, 1, 6, 7, 9, 23, 10.

The function should rearrange array as 7, 9, 23, 10, 2, 4, 1, 6

- c) An array P[20][30] is stored in the memory along the row with each of the element occupying 2 bytes, find out the base address of the array, if an element P[2][20] is stored at the memory location 5000.

- d) Write a function in C++ to perform PUSH on a dynamically allocated Stack containing Passenger details as given in the following definition of NODE.

```

struct NODE
{
    long Pno;           //passenger Number
    char Pname[20];    //passenger Name
    NODE *Link;
};
```

- e) Evaluate the following postfix notation of expression:
True, False, AND, True, True, NOT, OR, AND
- 3 a) Write a function SWAP2BEST(int ARR[],int Size) in C++ to modify the content of the array in such a way that the elements, which are multiples of 10 swap with the value present in the very next position in the array.
- For Example: If the content of array ARR is
90 , 56 , 45, 20 ,34 , 54
The content of array ARR should become
56 , 90 , 45 ,34 ,20 ,54
- b) An array V[40][10] is stored in the memory along the column with each of the element occupying 4 bytes, Find out the address of the location V[3][6] if the location V[30][10] is stored at the address 9000.
- c) Write a function in C++ to perform Insert operation in static circular Queue containing Players information (represented with the help of an array of structure PLAYER).
- ```
struct PLAYER
{
 long PID ; // Player ID
 char Pname [20] ; // Player Name
};
```
- d) Write a function CHANGE( ) in C++, which accepts a 2-D array of integer and its size as parameters and divide all those array elements by 7 which are not in the range 70 to 700 and find the square root of all other elements.
- e) Evaluate the following POSTFIX notation. Show status of Stack after every step of evaluation (i.e., after each operator)  
32, 4, /, 2, \*, 12, 3, -, +
4. a) What do you understand by Degree and Cardinality of a table?
- b) Consider the following tables **ACTIVITY** and **COACH**. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (viii)

**Table: ACTIVITY**

| <b>ACode</b> | <b>ActivityName</b> | <b>ParticipantsNum</b> | <b>PrizeMoney</b> | <b>ScheduleDate</b> |
|--------------|---------------------|------------------------|-------------------|---------------------|
| 1001         | Relay 100x4         | 16                     | 10000             | 23-Jan-2004         |
| 1002         | High jump           | 10                     | 12000             | 12-Dec-2003         |
| 1003         | Shot Put            | 12                     | 8000              | 14-Feb-2004         |
| 1005         | Long Jump           | 12                     | 9000              | 01-Jan-2004         |
| 1008         | Discuss Throw       | 10                     | 15000             | 19-Mar-2004         |

**Table: COACH**

| <b>PCode</b> | <b>Name</b>   | <b>ACode</b> |
|--------------|---------------|--------------|
| 1            | Ahmad Hussain | 1001         |
| 2            | Ravinder      | 1008         |
| 3            | Janila        | 1001         |
| 4            | Naaz          | 1003         |

- (i) To display the name of all activities with their ACodes in descending order.
- (ii) To display sum of PrizeMoney for each of the Number of participants groupings (as shown in column ParticipantsNum 10,12,16)
- (iii) To display the coach's name and ACodes in ascending order of ACode from the table COACH.
- (iv) To display the content of the GAMES table whose ScheduleDate earliar than 01/01/2004 in ascending order of ParticipantNum.
  
- (v) SELECT COUNT(DISTINCT ParticipantsNum) FROM ACTIVITY;
- (vi) SELECT MAX(ScheduleDate),MIN(ScheduleDate) FROM ACTIVITY;
- (vii) SELECT SUM(PrizeMoney) FROM ACTIVITY;
- (viii) SELECT DISTINCT ParticipantNum FROM COACH;

5. a) What do you understand by Primary Key & Candidate Keys?
- b) Consider the following tables GAMES and PLAYER and answer (c) and (d) parts of this question:

**Table: GAMES**

| GCode | GameName     | Type    | Number | PrizeMoney | Schedule Date |
|-------|--------------|---------|--------|------------|---------------|
| 101   | Carom Board  | Indoor  | 2      | 5000       | 23-Jan-2004   |
| 102   | Badminton    | Outdoor | 2      | 12000      | 12-Dec-2003   |
| 103   | Table Tennis | Indoor  | 4      | 8000       | 14-Feb-2004   |
| 105   | Chess        | Indoor  | 2      | 9000       | 01-Jan-2004   |
| 108   | Lawn Tennis  | Outdoor | 4      | 25000      | 19-Mar-2004   |

**Table: PLAYER**

| PCode | Name       | Gcode |
|-------|------------|-------|
| 1     | Nabi Ahmad | 101   |
| 2     | Ravi Sahai | 108   |
| 3     | Jatin      | 101   |
| 4     | Nazneen    | 103   |

- (c) Write SQL commands for the flowing statements:
- (i) To display the name of all GAMES with their GCodes
  - (ii) To display details of those GAMES which are having Prize Money more than 7000.
  - (iii) To display the content of the GAMES table in ascending order of Schedule Date.
  - (iv) To display sum of PrizeMoney for each Type of GAMES
- (d) Give the output of the following SQL queries:
- (i) SELECT COUNT(DISTINCT Number) FROM GAMES;
  - (ii) SELECT MAX(ScheduleDate),MIN(ScheduleDate) FROM GAMES;
  - (iii) SELECT Name, GameName FROM GAMES G, PLAYER P  
WHERE G.Gcode=P.Gcode AND G.PrizeMoney>10000;
  - (iv) SELECT DISTINCT Gcode FROM PLAYER;