R VEDHA VISALAKSHI

NPTEL ASSIGNMENT -

Problem Solving Through Programming In C

WEEK 12 – MCQ QUIZ

Week 12 : Assignment 12

The due date for submitting this assignment has passed.

Due on 2023-10-18, 23:59 IST.

Assignment submitted on 2023-10-11, 23:38 IST

1) Which of the following are themselves a collection of different data types? *1 point*

- a) String
- b) Array
- c) Character
- d) Structure

Yes, the answer is correct.
Score: 1
Accepted Answers:
d) Structure

2) Which of the following comments about the usage structures is true? *1 point*

- a) Storage class can be assigned to individual member
- b) Individual members can be initialized within a structure type declaration
- c) The scope of the member name is confined to the particular structure, within which it is defined
- d) None of the above

Yes, the answer is correct.
Score: 1
Accepted Answers:
c) The scope of the member name is confined to the particular structure, within which it is defined

3) What is actually passed if you pass a structure variable to a function? *1 point*

- a) Copy of structure variable
- b) Reference of structure variable
- c) Starting address of structure variable
- d) Ending address of structure variable

Yes, the answer is correct.
Score: 1
Accepted Answers:
a) Copy of structure variable

4) Which function is used to write a string to a file? *1 point*

- a) fputs()
- b) fprintf()
- c) fwrite()
- d) All of the above

Yes, the answer is correct.
Score: 1
Accepted Answers:
d) All of the above

5) *1 point*

Find the output of the following program

```
#include<stdio.h>
int main()
{
   char A[] = {'a','b','c','d','e','f','g','h'};
   char *p = A;
   ++p;
   while(*p != 'e')
   printf("%c", *p++);
   return 0;
}
```

- a) abcd
- b) bcd
- c) cd
- d) abcdfgh

Yes, the answer is correct.
Score: 1
Accepted Answers:
b) bcd

6) *1 point*

The program will allocate ……. bytes to ptr. Assume sizeof(int) = 4.

```
#include<stdio.h>
#include<stdlib.h>

int main()
{
   int *ptr;
   ptr = (int*)malloc(sizeof(int)*4);
   ptr = realloc(ptr,sizeof(int)*2);
   return 0;
}
```

- a) 8
- b) 16
- c) 4
- d) 32

Yes, the answer is correct.
Score: 1
Accepted Answers:
a) 8

7) *1 point*

What is the output of the following C code? Assume that the address of x is 2000 (in decimal) and an integer requires four bytes of memory.

```
#include <stdio.h>
int main()
{
   unsigned int x[4][3] = {{1, 2, 3}, {4, 5, 6}, {7, 8, 9}, {10, 11, 12}};
   printf("%u,%u, %u", x+3, *(x+3),*(x+2)+3);
   return 0;
}
```

- a) 2036, 2036, 2036
- b) 2012, 4, 2204
- c) 2036, 10, 10
- d) 2012, 4, 6

Yes, the answer is correct.
Score: 1
Accepted Answers:
a) 2036, 2036, 2036

8) Can a structure contain a pointer to its own type? *1 point*

- a) Yes
- b) No
- c) Only as an array
- d) Only if the structure is anonymous

Yes, the answer is correct.
Score: 1
Accepted Answers:
a) Yes

9) *1 point*

What is the output of the following code snippet?

```
struct Point {
    int x;
    int y;
};
struct Point *arr[2];
struct Point p1 = {1, 2}, p2 = {3, 4};
arr[0] = &p1;
arr[1] = &p2;
printf("%d", arr[1]->y);
```

- a) 1
- b) 2
- c) 3
- d) 4

Yes, the answer is correct.
Score: 1
Accepted Answers:
d) 4

10) *1 point*

What is the output of the following C program?

```
#include <stdio.h>
struct p
{
   int x;
   char y;
};

int main()
{
   struct p p1[] = {1, 90, 62, 33, 3, 34};
   struct p *ptr1 = p1;
   int x = (sizeof(p1) / 3);
   if (x == sizeof(int) + sizeof(char))
      printf("True");
   else
      printf("False");
   return 0;
}
```

- a) True
- b) False
- c) No output
- d) Compilation error

Yes, the answer is correct.
Score: 1
Accepted Answers:
b) False

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WEEK 11– PROGRAMMING ASSIGNMENT

Week 12 : Programming Assignment 1

Due on 2023-10-19, 23:59 IST

Write a program in C to find the factorial of a given number using pointers.

Private Test cases used for evaluation	Input	Expected Output	Actual Output	Status
Test Case 1	15	The Factorial of 15 is : 1307674368000	The Factorial of 15 is : 1307674368000\n	Passed

The due date for submitting this assignment has passed.
1 out of 1 tests passed.
You scored 100.0/100.

Assignment submitted on 2023-10-12, 00:23 IST

Your last recorded submission was :

```c
#include <stdio.h>
void findFact(int, long int*);
int main()
{
        long int fact; //factorial of the number
        int num1;
        scanf("%d",&num1); //The number is taken from test data

         findFact(num1, &fact);
         printf("The Factorial of %d is : %ld\n",num1, fact);
         return 0;
        }
void findFact(int n, long int *f)
{
    int i;
    *f =1;
    for(i=1;i<=n;i++)
        *f=*f*i;
}
```

R VEDHA VISALAKSHI

Week 12 : Programming Assignment 2

Due on 2023-10-19, 23:59 IST

Write a C program to print the Record of the Student Merit wise. Here a structure variable is defined which contains student rollno, name and score.

Private Test cases used for evaluation	Input	Expected Output	Actual Output	Status
Test Case 1	4 1 Pradip 900 2 Asutosh 600 3 Santosh 750 4 Sandip 500	The Merit List is :\n 1 Pradip 900\n 3 Santosh 750\n 2 Asutosh 600\n 4 Sandip 500	The Merit List is :\n 1 Pradip 900\n 3 Santosh 750\n 2 Asutosh 600\n 4 Sandip 500\n	Passed

The due date for submitting this assignment has passed.
1 out of 1 tests passed.
You scored 100.0/100.

Assignment submitted on 2023-10-12, 00:25 IST

Your last recorded submission was :

```c
#include<stdio.h>
struct student
{
int rollno;
char name[20];
int score;
};
void main()
{
struct student s[20];
int i, n;

scanf("%d" ,&n); //No. of Students taken from test data
// Roll no., Name and Score of n students are taken from test data
for(i=0;i<n;i++)
{
scanf("%d", &s[i].rollno);
scanf("%s", s[i].name);
scanf("%d", &s[i].score);
}
//Complete the program so that merit list is printed in descending order
    struct student temp;
    int j;
    for(i=0;i<n-1;i++)
    {
      for(j=0;j<n-1;j++)
      {
        if(s[j].score<s[j+1].score)
        {
          temp=s[j];
          s[j]=s[j+1];
          s[j+1]=temp;
        }
      }
    }


printf("The Merit List is :\n");
for(i=0;i<n;i++)
{
printf("%d", s[i].rollno);
printf("  %s", s[i].name);
printf("  %d\n", s[i].score);
}

}
```

Week 12 : Programming Assignment 3

Due on 2023-10-19, 23:59 IST

Write a C program to store n elements using Dynamic Memory Allocation - calloc() and find the Largest element

Private Test cases used for evaluation	Input	Expected Output	Actual Output	Status
Test Case 1	6 68.90 34.79 35.86 94.98 40.06 88.70	Largest element = 94.98	Largest element = 94.98	Passed

The due date for submitting this assignment has passed.
1 out of 1 tests passed.
You scored 100.0/100.

Assignment submitted on 2023-10-12, 00:26 IST

Your last recorded submission was :

```c
#include <stdio.h>
#include <stdlib.h>

int main()
{
    int n;
    float *element;

    scanf("%d", &n); //Total number of elements

    // Allocate the memory for 'n' number of elements.
    //Then take the elements as input from test data
    element = (float*) calloc(n, sizeof(float));
    if(element == NULL)
    {
        printf("Error!!! memory not allocated.");
        exit(0);
    }
    // Stores the number entered by the user.
    int i;
    for(i = 0; i < n; ++i)
    {
        scanf("%f", element + i);
    }
    // find the largest
    for(i = 1; i < n; ++i)
    {
       if(*element < *(element + i))
         *element = *(element + i);
    }
    printf("Largest element = %.2f", *element);
    return 0;
}
```

Week 12 : Programming Assignment 4

Due on 2023-10-19, 23:59 IST

Write a C program to find the sum of two 1D integer arrays 'A' and 'B' of same size and store the result in another array 'C', where the size of the array and the elements of the array are taken as input.
In the Test case the input is given as follows
5
10
20
30
40
50
1
2
3
4
5

So the output will be displayed as

Result is
11
22
33
44
55

Write the program accordingly. Use dynamic memory allocation.

Private Test cases used for evaluation	Input	Expected Output	Actual Output	Status
Test Case 1	6 15 25 35 45 55 65 5 5 5 5 5 5	Result is\n 20\n 30\n 40\n 50\n 60\n 70	Result is\n 20\n 30\n 40\n 50\n 60\n 70\n	Passed

The due date for submitting this assignment has passed.
1 out of 1 tests passed.
You scored 100.0/100.

Assignment submitted on 2023-10-12, 00:28 IST
Your last recorded submission was :

```c
#include<stdio.h>
#include<stdlib.h>

void main()
{
 int i,n;

//The number of elements in each array is taken from test case data

 scanf("%d", &n);
 int *a,*b,*c;
 a = (int *) malloc(n*sizeof(int));
 b = (int *) malloc(n*sizeof(int));
 c = (int *) malloc(n*sizeof(int));

// Input Elements of First List;
 for(i=0;i<n;i++)
 {
  scanf("%d",a+i);
 }

 //Input Elements of Second List;
 for(i=0;i<n;i++)
 {
  scanf("%d",b+i);
 }

 for(i=0;i<n;i++)
 {
  *(c+i) = *(a+i) + *(b+i);
 }

printf("Result is\n");

 for(i=0; i<n; i++)
 {
  printf("%d\n",*(c+i));
 }

}
```