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Courses » Programming, Data structures and Algorithms using C

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# Unit 6 - Week 5: Structures, Dynamic Memory Allocation and ADTs



## Course outline

### Assignment0

### Week 1: Basic Programming Constructs

### Week 2: Arrays, Pointers and Strings

### Week 3: Functions, Time complexity

### Week 4: Sorting and Searching Algorithms

### Week 5: Structures, Dynamic Memory Allocation and ADTs

- Structures
- More on Structures
- Using structures and pointers to structures
- Dynamic memory allocation
- Linked List
- Brief introduction to C++: Classes and objects
- Abstract Data Types
- More on ADT
- Quiz : Week 5 Quiz

## Week 5 Quiz

The due date for submitting this assignment has passed. **Due on 2018-03-14, 23:59 IST.** As per our records you have not submitted this assignment.

1) Is the following structure declaration correct? 1 point

```
struct employee{
    int empno;
    char ename[20];
    float salary;
    struct date{
        int day;
        int month;
        int year;
    }doj;
}emp;
```

- Yes  
 No

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

**Yes**

2) Which of the following is correct about the keyword typedef in C? 1 point

- It can only be used to assign names to user defined data types.  
 It can be used to assign alternative names to predefined data types.  
 Both a & b  
 None of the above.

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

**Both a & b**

3) Find the output of the following program. 1 point

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

- Programming Assignment 5.1: Reverse a linked list
- Programming Assignment 5.2: Pairwise Swap
- Programming Assignment 5.3: String Class
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**Week 6: Stacks, Queues, Heaps, Trees and Graphs**

**Week 7: Greedy Algorithms and Dynamic Programming**

**Week 8 : Hash Tables & Graph Algorithms**

**Week 9 : Graph Traversal, Articulation Points, File I/O, Modular programming**

**Help and FAQ**

**Interactive session with students**

```
struct Point{
int x;
int y;
}p1;

int main()
{
p1 point1={10,20};
p1 point2=point1;
printf("%d",point2.y);
return 0;
}
```

- 10
- 20
- Compilation error
- None of the above

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**  
*Compilation error*

4) Interpret what the following function does.

0 points

```
struct Node{
int value;
Node* next;
}
void dosomething(struct Node **head, int key)
{
struct Node *temp=*head;
struct Node *prev;
if(temp!=NULL && temp->data==key)
{
*head=temp->next;
free(temp);
}
while(temp!=NULL && temp->data!=key)
{
prev=temp;
temp=temp->next;
}
if (temp==NULL)
printf("node is not present in the linked list");
else
prev->next=temp->next;
free(temp);
}
```

- It inserts an element key in the linked list.
- It deletes the first occurrence of key in the linked list.
- It deletes all the occurrences of key in the linked list.
- None of the above

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**  
*It deletes the first occurrence of key in the linked list.*



5) Which of the following is incorrect in context of pointer to structures? 1 point

Assumption:

```
typedef struct student
{
    int rollno;
    char name[20];
}s;
s *st;
```

- (\*st).name
- st->name
- s->name
- None of above

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*s->name*

6) A node in a linked list is defined as:

```
typedef struct node {
    int data;
    struct node* next;
}Node;
```

List has elements 4->5->3->2->1->2.

The following function is executed.

```
int fun(struct Node *head, int index) {
    struct Node* current = head;
    int count=0;
    while (current !=NULL)
    {
        if(count == index)
            return current->data;
        count++;
        current=current->next;    } }
```

Variable *head* stores the pointer to the head of the list.

What is the output of print(head,2)?

- 4
- 2
- 1
- 5

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*5*

7) Choose the correct statements. 1 point

- Members of a class are private by default and members of struct are public by default.
- Members of a class are public by default and members of struct are public by default.

- Members of a class are private by default and members of struct are private by default.
- Members of a class are public by default and members of struct are private by default.

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*Members of a class are private by default and members of struct are public by default.*

8) Given two structures a1, a2 as defined below, how will you compare the two structures 1 point

```
struct A {
int a;
};
struct A a1,a2;
```

- a1==a2
- a1.a==a2.a
- Both A & B
- a1 and a2 cannot be compared.

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*a1.a==a2.a*

9) Which of the following is the correct way to dynamically allocate space to a 1D array? 1 point

- `int *arr=(void*)malloc(size*sizeof(int))`
- `int *arr=(int*)malloc(size*sizeof(int))`
- `int *arr=(int*)malloc(sizeof(int))`
- None of the above

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*`int *arr=(int*)malloc(size*sizeof(int))`*

10) In general, List ADT allows:

1 point

- Insertions and deletions anywhere.
- Insertions and deletions only at one end.
- Insertions at back and deletions at the front.
- Insertions at the front and deletions at the back

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*Insertions and deletions anywhere.*

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