Indian Institute of Technology Kanpur
ESC101 Fundamentals of Computing, 2018-19-a

Name: **ANSWER KEY**

Roll:

Sect:

MINOR QUIZ

W13P*

P1

```c
#include<stdio.h>
struct Point{
    int x;
    struct Point *y;
};
void call(struct Point* p){
    if(p == NULL|| p->y == NULL) return;
    printf("%d", p->y->x);
    call(p->y);
}
int main(){
    struct Point p1, p2, p3;
    p1.x = 1;
    p2.x = 2;
    p3.x = 3;
    p1.y = &p3;
    p3.y = &p2;
    p2.y = NULL;
    call(&p1);
    return 0;
}
```

Q1: What is the output of this code?

GOLD SOLUTION
32
MAX MARKS
5

```c
#include <stdio.h>
int b = 2;
int call(){
    if(!b) return 0;
    return b*b;
}
int fib(int b){
    if(!b) return 0;
    return call() + fib(b-1);
}
int main(){
    printf("%d", fib(b));
    return 0;
}
```

Q2: What is the output of this code?
Note: whitespaces indicated using gray-colored characters as in Prutor

GOLD SOLUTION
8
MAX MARKS
5

P2

```c
#include <stdio.h>
struct selfRef{
    int x;
    struct selfRef *next;
};
void printList(struct selfRef *first){
    if(first == NULL) return;
    printf("%d", first->x);
    printList(first->next);
}
int main(){
    struct selfRef a = {3, NULL}, b = {6, NULL};
    a.next = &b;
    b.next = &a;
    printList(&a);
    return 0;
}
```

Q1: What is the output of this code?

GOLD SOLUTION

The code will compile but give a runtime error (time or memory limit exceeded)

MAX MARKS

5

```c
#include <stdio.h>
int fun(int i, int j){
    int res = 1;
    for(int i = 1; i <= j; i++)
        res *= i;
    return res;
}
int main(){
    int j = 0;
    for(int i = 0; i < 2; i++){
        int x = i;
        for(int j = 0; j < 2; j++){
            x += fun(i, j);
        }
        j += x;
    }
    printf("%d", j);
    return 0;
}
```

Q2: What is the output of this code?
Note: whitespaces indicated using gray-colored characters as in Prutor

GOLD SOLUTION

5

MAX MARKS

5

P3

```c
#include <stdio.h>
struct SelfRef{
    int x[10];
    int *ptr;
};
int main(){
    struct SelfRef x;
    for(int i = 0; i < 10; i++)
        x.x[i] = 1 + i;
    x.ptr = x.x;
    printf("%d", *(x.ptr+3));
    return 0;
}
```

Q1: What is the output of this code?

GOLD SOLUTION

4

MAX MARKS

5

```c
#include<stdio.h>
int fun(int i, int j){
    int res = 1;
    for(int i = 1; i <= j; i++)
        res *= i;
    return res;
}
int main(){
    int x = 0;
    for(int i = 1; i < 4; i++)
        x += fun(x, i);
    printf("%d", x);
    return 0;
}
```

Q2: What is the output of this code?
Note: whitespaces indicated using gray-colored characters as in Prutor

GOLD SOLUTION

9

MAX MARKS

5

P4

```c
#include <stdio.h>
struct Jack{
    int x;
    struct Jack* next;
};
void printList(struct Jack *jill){
    static int i = 0;
    if(++i < 5)
        printf("%d", jill->x);
    printList(jill->next);
}
int main(){
    struct Jack var = {0, NULL};
    var.next = &var;
    printList(&var);
    return 0;
}
```

Q1: What is the output of this code?

GOLD SOLUTION

The code will compile but give a runtime error (time or memory limit exceeded)

MAX MARKS

5

```c
#include <stdio.h>
struct Pair{
    int x,y;
};
struct Pair p = {4,5};
void printPair(struct Pair p){
    printf("%d",p.x); // No spaces at all
}
int main(){
    struct Pair p = {3,4};
    for(; p.x > 0; p.x--){
        struct Pair p = {2,3};
        printPair(p);
    }
    return 0;
}
```

Q2: What is the output of this code?
Note: whitespaces indicated using gray-colored characters as in Prutor

GOLD SOLUTION

222

MAX MARKS

5