

### Example 7

```
#include <iostream.h>
#include <conio.h>
const int STR = 30 ;

struct address
{
    char street [STR];
    char post ;
    float distance ; //in kilometers
};

struct employee
{
    address branch;
    address home ;
};

void main( )
{
    clrscr ( );
    employee empl;

    // employee branch adderese
    cout << "enter branch street of the employee:";
    cin.get (empl. branch.street, STR);
    cout<<"enter branch post address";
    cin>>empl.branch. Post;
    cout<<"enter distance of the branch";
    cin>>empl.branch.distance;

    // employee home adderese
    cout << "enter home street of the employee:";
    cin.get (empl. home.street, STR);
    cout<<"enter home post address";
    cin>>empl.home. Post;
    cout<<"enter distance of the home";
    cin>>empl.home.distance;
    cout<<" Employee's branch street is : "<<empl.
    branch. street <<"and it is "<<empl.
    Branch. distance << "kms. Away ";
    getch( );
}
```

**Part one: Essay Questions.** Write your answer clearly and neatly. (5Ps)

1. Compare and contrast array vs. structure (2 marks)
2. Compare and contrast global, local and static scope of variables in terms of their life time and scope (3 marks)

**Part Two:** The following programs are written with some errors, so, rewrite the programs so that it can run without errors.

1. (2 marks)

```
#include<iostream.h>
#include<conio.h>
void main()
{
    char str1[]="Hello";
    char *str2="Adama University";
    str2++;
    str1++;
    cout<<str1<<" "<<str2;
    getch();
}
```

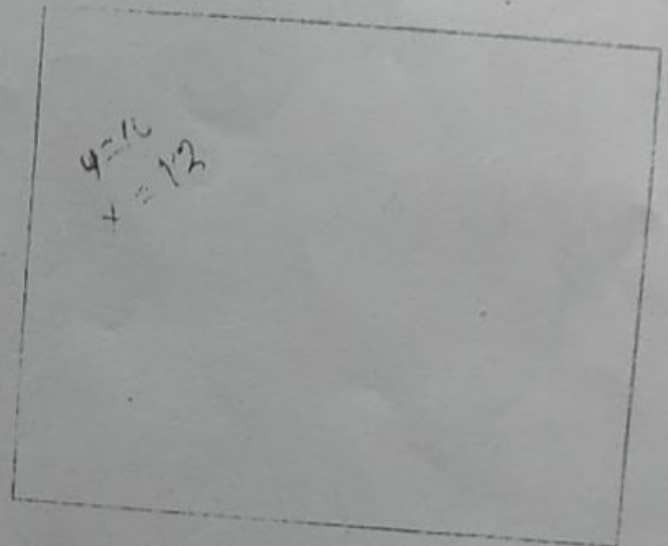
2. (3 marks)

```
#include<iostream.h>
#include<conio.h>
Void main ()
{
    sum(5, 10);
    getch();
}
Void sum (int num1, int num2 = 40, int num3)
{
    int total= num1+num2+num3;
    Cout<<"n the sum of three numbers "<<total;
}
```

**Part Three:** Write the output of the following code on the space (box) provided at the right side

1. (3 mark)

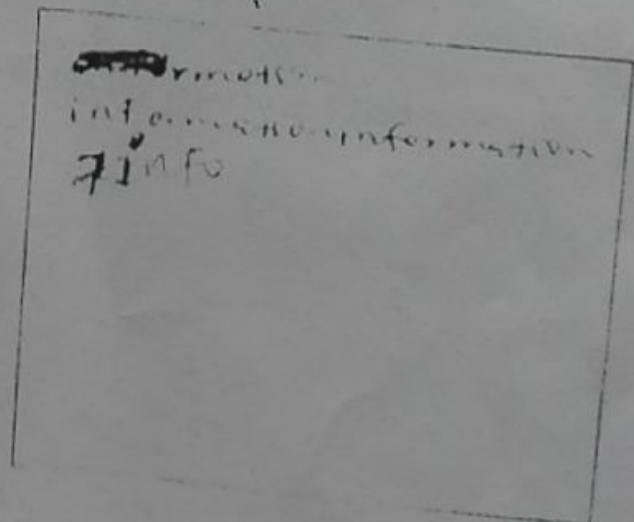
```
#include <iostream.h>
#include <conio.h>
int fun(int a, int &b)
{
    a+=3;
    b+=2;
    cout << a+b << "\n";
    return a-b;
}
void main()
{
    int x=7, y=10, res1, res2;
    res1 = fun(y, x);
    cout << res1;
    res2 = fun(x, y);
    cout << res2 << " " << x << " " << y << "\n";
    getch();
}
```



2. (3 mark)

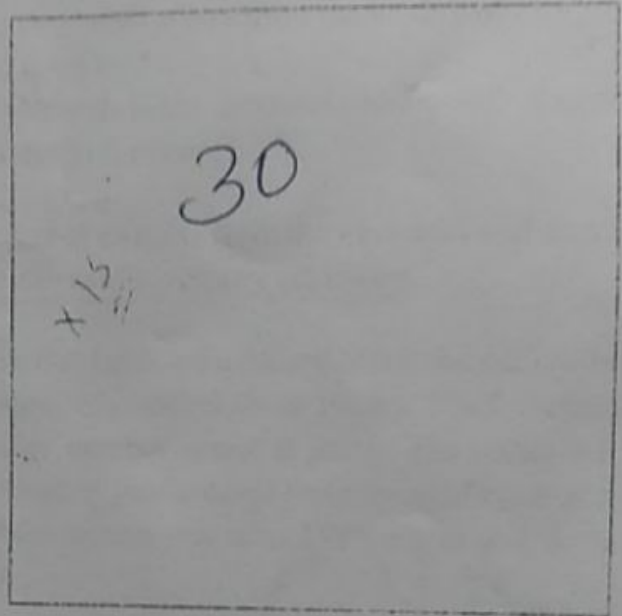
```
#include <iostream.h>
#include <conio.h>
```

```
Void main()
{
    Char str1[15], str2[15] = "information";
    strcpy(str1, str2);
    strcat(str2, str1);
    Int a = strlen(str1);
    Char str3[15] = "technology";
    Cout << str1 << endl << str2 << endl << a;
    If (strcmp(str1, str2) == 0)
    Cout << "infotech";
    else If (strcmp(str1, str3) < 0)
    Cout << "info"
    else
    Cout << "techno";
    getch();
}
```



3. (2 mark)

```
#include<iostream.h>
#include<conio.h>
int mult(int x)
{
    if(x==0)
        return 0;
    else if (x%5==0)
        return x+mult(x-1);
    else
        mult(x-1);
}
void main()
{
    int x=16;
    int res=mult(x);
    cout<<res;
    getch();
}
```



4. A C++ program contains the following statements

```
int x=5,y=7,z,*px,*py;
```

```
px=&x;
```

```
*px=2*x;
```

```
py=&y;
```

```
Z=2*(*py-*px);
```

Suppose the address of variable x ,y, and z is 100,104,108 respectively. Then answer the following questions.(one mark each)

What value is assigned to px? 100

What value is assigned to z? -6

What value is represented by \*px? 10

What value is represented by \*(&x)? 104

What value is represented by &(\*px)? 100

Part Four: Write a complete C++ program for each question. (5Pts each)

1. Write a program to accept ten (10) integer numbers from the keyboard using array then display the array element after multiplying them by 5.
2. Write a program which reads five elements using `getnum (int num[])` function then display the elements using `displaynum(int num[])` function.
3. Write a program that accept n number of integers from the keyboard and display average of only all odd numbers from the array. Use dynamic memory allocation
4. Holland car company need software that holds information about the car produced. Write a program using structure which accepts information about 10 cars. The information includes car model, fabrication year, serial number, number of seat & status. The status will automatically given by the program based on fabrication year entered from the keyboard. if the fabrication year is before 1995 the status is "old", if fabrication year after 1995, status will be "new", the program should output in the following way.

Car model  
Serial number  
Fabrication year  
Number of seat  
Status

5. Write a program that produces the following output using multidimensional array.

|       | Mid | final | total |
|-------|-----|-------|-------|
| Stud1 | 20  | 50    | 70    |
| Stud2 | 23  | 30    | 53    |
| Stud3 | 10  | 50    | 60    |
| Stud4 | 40  | 10    | 50    |

String str[4] = {"", "", "", ""};

String str[4] = {"Stud1", "Stud2", "Stud3", "Stud4"};

int a[4][2] = {

int sum = 0

cout << str[i] << " " << mid << endl;

for (int i = 0; i < 4; i++)

{

cout << str[i] << " " << mid << endl;

(5)

Name \_\_\_\_\_

ID \_\_\_\_\_

Identify the syntax error of the following code segment and rewrite on the space provided

```
#include<iostream.h>
#include<conio.h>
```

```
int main()
{
    int a,b,d;
    a=5; b = 6;
    c=a+b;
    cout<<c;
    cin<<d;
    getch();
}
```

```
#include<iostream.h>
#include<conio.h>
int main() {
    int a,b,d;
    a=5, b=6;
    c=a+b;
    cout<<c;
    cin>>d;
    getch();
}
```

Write the output of the following code segment

```
void main () {
    char k,l,z;
    z='c';
    l=g;
    z='o';
    cout<<"the first "<<endl<<"a"<<z<<"b"<<i;
    cout<<"the"<<endl<<"a"<<l<<z<<"H";
}
```

the first

a

o

b

3. what is the output of the following code segment;

```
int main()
{
    for(int a=10;a>4;a=a-2)
        cout<<a<<endl;
}
```

10  
8  
6

4. write the output of the following program

```
void main()
{int w, x, y;
    w=x=y=2;
    y++;
    x--;
    w=--x;
    cout<<y<<"D"<<w<<"F"<<x;}
```

3D0F0

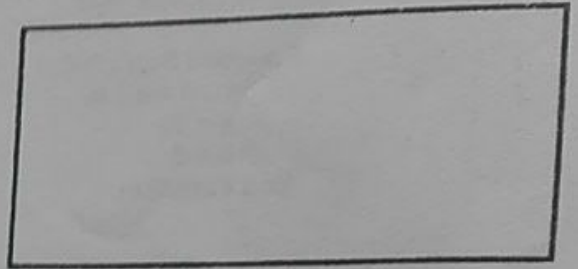
write the output of the following program

```
void main(){
    int a = 0;
    while(a<=6){
        cout<<a<<endl<<"a";
        a++;
        a++;
    }
```

0  
a2  
a4  
a6  
a

write the output of the following program

```
void main()
{
    for(int q=2; q<=5; q++)
        for(int c=0; c<=3; c++)
            cout<<c;
}
```



write the output of the following program

```
void add() {
    int a=3, b=4, c;
    c=a+b;
    cout<<a<<b<<c;
}
```

```
void main() {
    cout<<"this program";
    int d=5;
    cout<<d<<"that prog";
    add();
}
```

this program 5 that prog 347

write the output of the following program

```
void sum(int a, int &b) {
    int c;
    c=a+b;
    a=7;
    b=9;
    cout<<a<<b<<c;
}
```

```
void main() {
    cout<<"function";
    int e=4, r=5;
    add(e, r);
    cout<<e<<r;
}
```

function

## Part II: coding

1. write the program that display your name and id;
2. write the program that display

1  
12  
123  
1234

3. write the program that display

1234  
1234  
1234

c. Degrees(8)

d. All

## Part II: Coding (18 point)

1. Write the output on the box

```
Function Sum(ByRef a As Integer, ByRef b As Integer) As Integer
    sum = a + b
    a = 10
    b = 5
End Function
```

And the following code is written in the main procedure

```
Dim A As Integer, B As Integer
```

```
A = 6
```

```
B = 2
```

```
Dim result As Integer
```

```
result = sum(A, B)
```

```
Console.WriteLine(A)
```

```
Console.WriteLine(B)
```

```
Console.WriteLine(result)
```

What is the output of A, B and C.

Output

A = 10  
B = 5  
C = 8

2. Write the output on the box

```
Function Sum(ByVal a As Integer, ByRef b As Integer) As Integer
    sum = a + b
    a = 6
    b = 3
End Function
```

Output

A = 6  
B = 3  
C = 8

What is the output of A, B and C. Using the above main procedure code

3. Write the output on the box

```
Function Sum(a As Integer, ByRef b As Integer) As Integer
    sum = a + b
    a = 6
    b = 3
End Function
```

Output

What is the output of A, B and C. Using the above main procedure