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**QUES 1) WRITE A PROGRAM TO ADD TWO NUMBERS**

The screenshot shows a C++ development environment with the following details:

- Menu Bar:** File, Edit, Search, Run, Compile, Debug, Project, Options, Window, Help.
- File Path:** LAB1HA~1\ADD.CPP
- Code Area:** Contains the following C++ code:

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a,b,sum;
    clrscr();
    printf("ENTER TWO NUMBERS  ");
    scanf("%d%d",&a,&b);
    sum=a+b;
    printf("Addition=%d",sum);
    getch();
}
```
- Status Bar:** Shows the line number 1:1 and various keyboard shortcuts: F1 Help, Alt-F8 Next Msg, Alt-F7 Prev Msg, Alt-F9 Compile, F9 Make, F10 Menu.
- Output Area:** Displays the program's output:

```
ENTER TWO NUMBERS  35
87
Addition=122_
```

```
ENTER TWO NUMBERS  5  
9  
Addition=14_
```

```
ENTER TWO NUMBERS  43  
-6  
Addition=37
```

## QUES 2) WRITE A PROGRAM TO FIND THE AREA OF TRIANGLE.

The screenshot shows a terminal window with a black background and white text. At the top, there is a menu bar with options: File, Edit, Search, Run, Compile, Debug, Project, Options, Window, and Help. Below the menu bar, the title bar displays "LAB1HA~1\AREAOF~1.CPP". The main area of the terminal contains the following C++ code:

```
#include <stdio.h>
#include <math.h>
#include <conio.h>
int main()
{
    clrscr();
    double a, b, c, s, area;
    printf("Enter sides of a triangle\n");
    scanf("%lf%lf%lf", &a, &b, &c);
    s = (a+b+c)/2;
    area = sqrt(s*(s-a)*(s-b)*(s-c));
    printf("Area of the triangle = %.2lf\n", area);
    getch();
    return 0;
}
```

Below the code, the terminal prompt "1:1" is visible. The command line shows the following interaction:

```
F1 Help Alt-F8 Next Msg Alt-F7 Prev Msg Alt-F9 Compile F9 Make F10 Menu
Enter sides of a triangle
3
8
9
Area of the triangle = 11.83
```

```
Enter sides of a triangle  
4  
6  
3  
Area of the triangle = 5.33
```

```
-  
  
Enter sides of a triangle  
3  
6  
8  
Area of the triangle = 116.88
```

**QUES 3) WRITE A PROGRAM TO FIND DISTANCE BETWEEN TWO X AND TWO Y COORDINATES.**

The screenshot shows a terminal window with a black background and white text. At the top, there is a menu bar with options: File, Edit, Search, Run, Compile, Debug, Project, Options, Window, and Help. Below the menu bar, the title bar displays "LAB1\A~1\DISTAN~1.CPP". The main area of the terminal contains the following C++ code:

```
#include<stdio.h>
#include<math.h>
#include<conio.h>
int main()
{
    float x1, y1, x2, y2, distance;
    clrscr();
    printf("Enter point 1 (x1, y1)\n");
    scanf("%f%f", &x1, &y1);
    printf("Enter point 2 (x2, y2)\n");
    scanf("%f%f", &x2, &y2);
    distance = sqrt( (x2 - x1)*(x2 - x1) + (y2 - y1)*(y2 - y1) );
    printf("Distance between (%.2f, %.2f) and (%.2f, %.2f) is %.2f\n", x1,
    getch();
    return 0;
}
```

Below the code, the terminal prompt "1:1" is visible. The command line interface shows the following interaction:

```
F1 Help Alt-F8 Next Msg Alt-F7 Prev Msg Alt-F9 Compile F9 Make F10 Menu
Enter point 1 (x1, y1)
2
6
Enter point 2 (x2, y2)
4
0
Distance between (2.00, 6.00) and (4.00, 0.00) is 6.32
```

```
Enter point 1 (x1, y1)
3
7
Enter point 2 (x2, y2)
4
8
Distance between (3.00, 7.00) and (4.00, 8.00) is 1.41
-
```

```
Enter point 1 (x1, y1)
5
4
Enter point 2 (x2, y2)
8
9
Distance between (5.00, 4.00) and (8.00, 9.00) is 5.83
```

**QUES 4) WRITE A PROGRAM TO FIND AVERAGE OF 3 NUMBERS.**

The screenshot shows a terminal window with a dark blue background and white text. At the top, there is a menu bar with options: File, Edit, Search, Run, Compile, Debug, Project, Options, Window, and Help. Below the menu bar, the title bar displays "LAB1HA~1\AUGOF3~1.CPP" and "1=[t]". The main area of the window contains the following C++ code:

```
#include<stdio.h>
#include<conio.h>
int main()
{
    float num1, num2, num3;
    float sum, avg;
    clrscr();
    printf("Enter three Numbers: ");
    scanf("%f %f %f", &num1, &num2, &num3);
    sum = num1 + num2 + num3;
    avg = sum / 3;
    printf("Entered numbers are: %.2f, %.2f and %.2f\n",
           num1, num2, num3);
    printf("Average=% .2f\n", avg );
    getch();
    return 0;
}
```

At the bottom of the window, there is a status bar with the text "1:1" and a small icon. Below the status bar, there is a menu bar with options: F1 Help, F2 Save, F3 Open, Alt-F9 Compile, F9 Make, F10 Menu. The terminal prompt "Enter three Numbers: " is followed by the input "7.5 7". The output shows the entered numbers and their average: "Entered numbers are: 3.00, 7.50 and 7.00" and "Average=5.83".

```
Enter three Numbers: 4  
6.4  
6  
Entered numbers are: 4.00, 6.40 and 6.00  
Average=5.47
```

```
Enter three numbers:6?  
6  
32  
Average=35.000000
```

**QUES 5) WRITE A PROGRAM TO FIND AVERAGE OF 3 NUMBERS USING FUNCTIONS.**

The screenshot shows a terminal window with a black background and white text. At the top, there is a menu bar with options: File, Edit, Search, Run, Compile, Debug, Project, Options, Window, and Help. Below the menu bar, the title bar displays "LAB1HA~1\AUERAG~1.CPP" and the line number "1=[t]". The main area of the window contains the following C++ code:

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int n1,n2,n3;
    void avg (int a, int b, int c);
    clrscr();
    printf("Enter three numbers:");
    scanf("%d %d %d",&n1,&n2,&n3);
    avg(n1,n2,n3);
    getch();
}
void avg (int a, int b, int c)
{
    float average;
    average=(a+b+c)/3.0;
    printf("average=%f",average);
}
```

At the bottom of the window, there is a status bar with the text "1:1" and a small icon. Below the status bar, there is a menu bar with options: F1 Help, Alt-F8 Next Msg, Alt-F7 Prev Msg, Alt-F9 Compile, F9 Make, F10 Menu. The command line prompt "Enter three numbers:" is followed by the input "2 7 5" and the output "Average=4.666667\_".

```
Enter three numbers:4
```

```
7
```

```
5
```

```
Average=5.333333
```

```
Enter three Numbers: 4.3
```

```
5.6
```

```
7
```

```
Entered numbers are: 4.30, 5.60 and 7.00
```

```
Average=5.63
```

```
-
```

**QUES 6) WRITE A PROGRAM TO CALCULATE THE BILL ACCORDING TO THE BASIC GIVEN DATA.**

```
#include <stdio.h>
#include <conio.h>
int main()
{
    int unit;
    float amt, total_amt, sur_charge;
    clrscr();
    printf("Enter total units consumed: ");
    scanf("%d", &unit);
    if(unit <= 50)
    {
        amt = unit * 0.50;
    }
    else if(unit <= 150)
    {
        amt = 25 + ((unit-50) * 0.75);
    }
    else if(unit <= 250)
    {
        amt = 100 + ((unit-150) * 1.20);
    }
    else
    {
        amt = 220 + ((unit-250) * 1.50);
    }
    sur_charge = amt * 0.20;
    total_amt = amt + sur_charge;
    printf("Electricity Bill = Rs. %.2f", total_amt);
    getch();
    return 0;
}
```

Enter total units consumed: 123  
Electricity Bill = Rs. 95.70

Enter total units consumed: 342  
Electricity Bill = Rs. 429.60

Enter total units consumed: 35  
Electricity Bill = Rs. 21.00\_

**QUES 7) WRITE A PROGRAM TO PRINT EVEN NUMBERS FROM 1 TO N**

The screenshot shows a terminal window with a menu bar at the top. The menu bar includes File, Edit, Search, Run, Compile, Debug, Project, Options, Window, and Help. Below the menu bar, the title bar displays "LAB1HA~1\EVENNO~1.CPP". The main area of the terminal contains the following C++ code:

```
#include <stdio.h>
#include <conio.h>
int main()
{
    int i = 2, number;
    clrscr();
    printf("Please Enter the Maximum Limit Value : ");
    scanf("%d", &number);
    printf("\n Even Numbers between 1 and %d are : \n", number);
    while(i <= number)
    {
        printf("%d\n", i);
        i = i+2;
    }
    getch();
    return 0;
}
```

At the bottom of the terminal window, there is a status bar with several icons and labels. The labels include F1 Help, Alt-F8 Next Msg, Alt-F7 Prev Msg, Alt-F9 Compile, F9 Make, and F10 Menu. The status bar also shows the current file path as "2:2".

The terminal output shows the program's execution. It prompts the user to enter a maximum limit value of 43. The program then prints the even numbers between 1 and 43, separated by new lines:

```
Please Enter the Maximum Limit Value : 43
Even Numbers between 1 and 43 are :
2      4      6      8      10     12     14     16     18     20
22     24     26     28     30     32     34     36     38     40
42
```

Please Enter the Maximum Limit Value : 10

Even Numbers between 1 and 10 are :

2        4        6        8        10

Please Enter the Maximum Limit Value : 98

Even Numbers between 1 and 98 are :

2	4	6	8	10	12	14	16	18	20
22	24	26	28	30	32	34	36	38	40
42	44	46	48	50	52	54	56	58	60
62	64	66	68	70	72	74	76	78	80
82	84	86	88	90	92	94	96	98	

**QUES 8) WRITE A PROGRAM TO PRINT WHETHER THE INPUT NUMBER IS EVEN OR ODD.**

The screenshot shows a C++ development environment with the following details:

- Menu Bar:** File, Edit, Search, Run, Compile, Debug, Project, Options, Window, Help.
- Project Name:** LAB1HA~1\EVENOR~1.CPP
- Code Editor Content:**

```
#include<iostream.h>
#include<conio.h>
void main()
{
    int no;
    clrscr();
    cout<<"Enter any num: ";
    cin>>no;
    if (no%2==0)
    {
        cout<<"Even num";
    }
    else
    {
        cout<<"Odd num";
    }
    getch();
}
```
- Status Bar:** F1 Help, F2 Save, F3 Open, Alt-F9 Compile, F9 Make, F10 Menu. The time 17:4 is also displayed.
- Output Window:** Shows the input "Enter any num: 78" and the output "Even num".

Enter any num: 43

Odd num\_

Enter any num: 1

Odd num\_

**QUES 9) WRITE A PROGRAM TO CONVERT FAHRENHEIT INTO CELSIUS.**

The screenshot shows a terminal window with a dark blue background. At the top, there is a menu bar with options: File, Edit, Search, Run, Compile, Debug, Project, Options, Window, and Help. Below the menu bar, the current file is displayed as LAB1HA~1\FARHEN~1.CPP. The main area of the window contains the following C code:

```
#include <stdio.h>
#include <conio.h>
int main()
{
    float celsius, fahrenheit;
    clrscr();
    printf("Enter temperature in Fahrenheit: ");
    scanf("%f", &fahrenheit);
    celsius = (fahrenheit - 32) * 5 / 9;
    printf("%.2f Fahrenheit = %.2f Celsius", fahrenheit, celsius);
    getch();
    return 0;
}
```

At the bottom of the window, there is a status bar with several icons and labels. The labels include: F1 Help, Alt-F8 Next Msg, Alt-F7 Prev Msg, Alt-F9 Compile, F9 Make, and F10 Menu. Below the status bar, the terminal prompt "Enter temperature in Fahrenheit: " is visible, followed by the output "104.00 Fahrenheit = 40.00 Celsius".

Enter temperature in Fahrenheit: 98.6  
98.60 Fahrenheit = 37.00 Celsius

Enter temperature in Fahrenheit: 75  
75.00 Fahrenheit = 23.89 Celsius

**QUES 10) WRITE A PROGRAM TO FIND THE FACTORIAL OF A NUMBER.**

The screenshot shows a terminal window with a black background and white text. At the top, there is a menu bar with options: File, Edit, Search, Run, Compile, Debug, Project, Options, Window, and Help. Below the menu bar, the title bar displays "LAB1HA~1\FACTOR~1.CPP". The main area of the window contains the following C++ code:

```
#include <stdio.h>
#include <conio.h>
int main()
{
    int n,i,f;
    f=i=1;
    clrscr();
    printf("Enter a Number to Find Factorial: ");
    scanf("%d",&n);
    while(i<=n)
    {
        f*=i;
        i++;
    }
    printf("The Factorial of %d is : %d",n,f);
    getch();
    return 0;
}
```

At the bottom of the window, there is a status bar showing the time "16:13" and several keyboard shortcuts: F1 Help, Alt-F8 Next Msg, Alt-F7 Prev Msg, Alt-F9 Compile, F9 Make, F10 Menu.

The terminal window also displays the output of the program. It asks for a number, receives "7", calculates the factorial, and prints "The Factorial of 7 is : 5040".

Enter a Number to Find Factorial: 4  
The Factorial of 4 is : 24\_

Enter a Number to Find Factorial: 3  
The Factorial of 3 is : 6\_

**QUES 11) WRITE A PROGRAM TO FIND AREA OF A TRIANGLE USING FUNCTIONS.**

The image shows a dual-pane code editor with two windows side-by-side, both displaying the same C++ program. The top window has a status bar showing "16:1" and the bottom window shows "22:1". Both windows have identical menus at the top: File, Edit, Search, Run, Compile, Debug, Project, Options, Window, Help. The status bars at the bottom of both windows also show the same menu options: F1 Help, F2 Save, F3 Open, Alt-F9 Compile, F9 Make, F10 Menu.

```
#include <stdio.h>
#include <math.h>
#include <conio.h>
double area_of_triangle(double, double, double);
int main()
{
    double a, b, c, area;
    clrscr();
    printf("Enter the lengths of sides of a triangle\n");
    scanf("%lf%lf%lf", &a, &b, &c);
    area = area_of_triangle(a, b, c);
    printf("Area of the triangle = %.2lf\n", area);
    getch();
    return 0;
}
double area_of_triangle(double a, double b, double c)
{
    double s, area;
    s = (a+b+c)/2;
    area = sqrt(s*(s-a)*(s-b)*(s-c));
    return area;
}
```

```
Enter the lengths of sides of a triangle
6
9
8
Area of the triangle = 23.53
-
```

```
Enter the lengths of sides of a triangle
5
7
3
Area of the triangle = 6.50
-
```

```
Enter the lengths of sides of a triangle
3
5
4
Area of the triangle = 6.00
```

**QUES 12) WRITE A PROGRAM TO PRINT WHETHER THE ENTERED NUMBER IS POSITIVE, NEGATIVE OR ZERO.**

The screenshot shows a terminal window with a black background and white text. At the top, there is a menu bar with options: File, Edit, Search, Run, Compile, Debug, Project, Options, Window, and Help. Below the menu bar, the title bar displays "LAB1HA~1\POSTIUV~1.CPP". The main area of the window contains the following C++ code:

```
#include <stdio.h>
#include <conio.h>
int main() {
    double num;
    clrscr();
    printf("Enter a number: ");
    scanf("%lf", &num);
    if (num <= 0.0) {
        if (num == 0.0)
            printf("You entered 0.");
        else
            printf("You entered a negative number.");
    }
    else
        printf("You entered a positive number.");
    getch();
    return 0;
}
```

At the bottom of the window, there is a status bar with the time "10:9" and several keyboard shortcuts: F1 Help, Alt-F8 Next Msg, Alt-F7 Prev Msg, Alt-F9 Compile, F9 Make, F10 Menu. The terminal also displays the user's input "Enter a number: -7" and the program's output "You entered a negative number."

Enter a number: 34  
You entered a positive number.

Enter a number: 0  
You entered 0.

**QUES 13) WRITE A PROGRAM TO PRINT ALL THE EVEN NUMBERS FROM M TO N.**

The screenshot shows a terminal window with a black background and white text. At the top, there is a menu bar with options: File, Edit, Search, Run, Compile, Debug, Project, Options, Window, and Help. Below the menu bar, the title bar displays "LAB1HA~1\MTDN.CPP" and the line number "1=[↑]". The main area of the window contains the following C++ code:

```
#include <stdio.h>
#include <conio.h>
int main()
{
    int i, n,p;
    clrscr();
    printf("Print all even numbers from ");
    scanf("%d", &n);
    printf(" to ");
    scanf("%d",&p);
    printf("Even numbers are");
    for(i=n; i<=p; i++)
    {
        if(i%2 == 0)
        {
            printf(" %d ", i);
        }
    }
    getch();
    return 0;
}
```

Below the code, the status bar shows "1:1" and a series of F1 through F10 keys with their corresponding functions: Help, Alt-F8 Next Msg, Alt-F7 Prev Msg, Alt-F9 Compile, F9 Make, and F10 Menu. The output of the program is displayed in the main window, showing the prompt "Print all even numbers from", the user input "4", the output "to 23", and the final output "Even numbers are 4 6 8 10 12 14 16 18 20 22".

Print all even numbers from 5  
to 87

Even numbers are 6 8 10 12 14 16 18 20 22 24 26  
28 30 32 34 36 38 40 42 44 46 48 50 52  
54 56 58 60 62 64 66 68 70 72 74 76 78 80  
82 84 86 -

Print all even numbers from 8  
to 19

Even numbers are 8 10 12 14 16 18

**QUES )14 WRITE A PROGRAM TO PRINT THE ROOTS OF A QUADRATIC EQUATION ALONG WITH ITS NATURE.**

The image shows a screenshot of a C++ development environment with two code windows. Both windows have the title bar "LAB1HA~1\QUADRA~1.CPP" and the menu bar "File Edit Search Run Compile Debug Project Options Window Help".

**Code Window 1 (Top):**

```
#include <math.h>
#include <stdio.h>
#include <conio.h>
int main()
{
    double a, b, c, discriminant, root1, root2, realPart, imagPart;
    clrscr();
    printf("Enter coefficients a, b and c: ");
    scanf("%lf %lf %lf", &a, &b, &c);
    discriminant = b * b - 4 * a * c;
    if (discriminant > 0) {
        printf("THE ROOTS ARE REAL AND DIFFERENT : ");
        root1 = (-b + sqrt(discriminant)) / (2 * a);
        root2 = (-b - sqrt(discriminant)) / (2 * a);
        printf("root1 = %.2lf and root2 = %.2lf", root1, root2);
    }
    else if (discriminant == 0) {
        printf("THE ROOTS ARE REAL AND EQUAL : ");
        root1 = root2 = -b / (2 * a);
        printf("root1 = root2 = %.2lf", root1);
    }
}
```

**Code Window 2 (Bottom):**

```
if (discriminant > 0) {
    printf("THE ROOTS ARE REAL AND DIFFERENT : ");
    root1 = (-b + sqrt(discriminant)) / (2 * a);
    root2 = (-b - sqrt(discriminant)) / (2 * a);
    printf("root1 = %.2lf and root2 = %.2lf", root1, root2);
}
else if (discriminant == 0) {
    printf("THE ROOTS ARE REAL AND EQUAL : ");
    root1 = root2 = -b / (2 * a);
    printf("root1 = root2 = %.2lf", root1);
}
else
{
    printf("THE ROOTS ARE NOT REAL : ");
    realPart = -b / (2 * a);
    imagPart = sqrt(-discriminant) / (2 * a);
    printf("root1 = %.2lf+%.2li and root2 = %.2lf-%.2li", realPart, imagPart);
}
getch();
return 0;
}
```

```
Enter coefficients a, b and c: 2  
-9  
4  
THE ROOTS ARE REAL AND DIFFERENT : root1 = 4.00 and root2 = 0.50
```

```
Enter coefficients a, b and c: 9  
-12  
4  
THE ROOTS ARE REAL AND EQUAL : root1 = root2 = 0.67;
```

```
Enter coefficients a, b and c: 2  
5  
4  
THE ROOTS ARE NOT REAL : root1 = -1.25+0.66i and root2 = -1.25-0.66i_
```

**QUES 15) WRITE A PROGRAM TO PRINT THE ROOTS OF QUADRATIC EQUATION.**

```
#include <stdio.h>
#include <math.h>
#include <conio.h>
int main()
{
    int a, b, c, d;
    double root1, root2;
    clrscr();
    printf("Enter a, b and c where axxx + bx + c = 0\n");
    scanf("%d%d%d", &a, &b, &c);
    d = b*b - 4*a*c;
    if (d < 0)
    {
        printf("First root = %.2lf + i%.2lf\n", -b/(double)(2*a), sqrt(-d)/(2*a));
        printf("Second root = %.2lf - i%.2lf\n", -b/(double)(2*a), sqrt(-d)/(2*a));
    }
    else
    {
        root1 = (-b + sqrt(d))/(2*a);
        root2 = (-b - sqrt(d))/(2*a);
        printf("First root = %.2lf\n", root1);
        printf("Second root = %.2lf\n", root2);
    }
    getch();
    return 0;
}
```

```
Enter a, b and c where a*x**2 + b*x + c = 0
2
-9
4
First root = 4.00
Second root = 0.50
-
```

```
Enter a, b and c where a*x**2 + b*x + c = 0
9
-12
4
First root = 0.67
Second root = 0.67
-
```

```
Enter a, b and c where a*x**2 + b*x + c = 0
2
5
4
First root = -1.25 + i0.66
Second root = -1.25 - i0.66
```

**QUES 16) WRITE A PROGRAM TO FIND THE SUM OF SQUARE OF ALL COMING ODD NUMBERS TILL N.**

The screenshot shows a C++ development environment with the following details:

- File Menu:** File, Edit, Search, Run, Compile, Debug, Project, Options, Window, Help.
- Project Name:** LAB1HA~1\SUMOFS~2.CPP
- Code Area:** The code is written in C/C++ and calculates the sum of squares of odd numbers up to a given integer. It includes #include <stdio.h>, #include <conio.h>, and void main(). The logic involves checking if a number is odd (i%2!=0) and then adding its square to the sum.
- Output Area:** Shows the program's output after running. It prompts for an integer input, receives 7, and then displays the result "THE SUM OF SQUARE OF ODD NOS. TILL 7 NO. IS : 84".
- Bottom Bar:** F1 Help, F2 Save, F3 Open, Alt-F9 Compile, F9 Make, F10 Menu.

```
#include <stdio.h>
#include <conio.h>
void main()
{
    int NUM,i,j,SUM=0,d;
    clrscr();
    printf("ENTER INTEGER NUMBER :");
    scanf("%d",&NUM);
    for(i=1;i<NUM+1;i++)
    {
        if(i%2!=0)
        {
            SUM=SUM+(i*i);
        }
    }
    printf("THE SUM OF SQUARE OF ODD NOS. TILL %d NO. IS : %d",NUM,SUM);
    getch();
}
```

ENTER INTEGER NUMBER :?  
THE SUM OF SQUARE OF ODD NOS. TILL ? NO. IS : 84

ENTER INTEGER NUMBER :5  
THE SUM OF SQUARE OF ODD NOS. TILL 5 NO. IS : 35

ENTER INTEGER NUMBER :14  
THE SUM OF SQUARE OF ODD NOS. TILL 14 NO. IS : 455

**QUES 17) WRITE A PROGRAM TO PRINT THE SUM OF DIGITS OF A ENTERED NUMBER.**

The screenshot shows a C++ development environment with the following details:

- Menu Bar:** File, Edit, Search, Run, Compile, Debug, Project, Options, Window, Help.
- Code Editor:** The file is named "LAB1HA~1\SUMOFD~1.CPP". The code is as follows:

```
#include<stdio.h>
#include<conio.h>
int main()
{
    int n,sum=0,m;
    clrscr();
    printf("Enter a number:");
    scanf("%d",&n);
    while(n>0)
    {
        m=n%10;
        sum=sum+m;
        n=n/10;
    }
    printf("Sum is=%d",sum);
    getch();
    return 0;
}
```

- Status Bar:** Shows "1:1" and a menu bar with F1 through F10 options.
- Output Window:** Displays the program's output:  
Enter a number:654  
Sum is=15

Enter a number:4289  
Sum is=23\_

Enter a number:34  
Sum is=7

**QUES 18) WRITE A PROGRAM TO INTERCHANGE THE LARGEST AND SMALLEST ELEMENT IN AN ARRAY.**

The image shows a dual-pane code editor with two windows side-by-side, both displaying the same C++ program. The top window shows the initial state of the code, and the bottom window shows the completed code with the interchange logic added.

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int a[5],max,min,maxpos,minpos,i,temp;
    clrscr();
    printf("Enter 5 integers: ");
    for(i=0;i<5;i++)
        scanf("%d",&a[i]);
    max=a[0];
    min=a[0];
    maxpos=0;
    minpos=0;
    for(i=1;i<5;i++)
    {
        if(a[i]>max)
        {
            max=a[i];
            maxpos=i;
        }
        if(a[i]<min)
        {
            min=a[i];
            minpos=i;
        }
    }
    temp=a[maxpos];
    a[maxpos]=a[minpos];
    a[minpos]=temp;
    printf("After interchange array elements are: ");
    for(i=0;i<5;i++)
        printf("%d ",a[i]);
    getch();
}
```

```
Enter 5 integers: 3  
6  
8  
1  
2  
After interchange array elemnts are: 3 6 1 8 2
```

```
Enter 5 integers: 1  
3  
5  
7  
9  
After interchange array elemnts are: 9 3 5 7 1 _
```

```
Enter 5 integers: 9  
8  
7  
6  
5  
After interchange array elemnts are: 5 8 7 6 9
```

**QUES 19) WRITE A PROGRAM TO FIND WHETHER THE ENTERED CHARACTER IS A VOWEL OR A CONSONANT.**

```
#include <stdio.h>
#include <conio.h>
int main()
{
    char ch;
    clrscr();
    printf("Enter any alphabet: ");
    scanf("%c", &ch);
    switch(ch)
    {
        case 'a':
        case 'e':
        case 'i':
        case 'o':
        case 'u':
        case 'A':
        case 'E':
        case 'I':
        case 'O':
        case 'U':
    }
}
```

```
File Edit Search Run Compile Debug Project Options Window Help
[ ] LAB1HA~1\FINDWH~1.CPP 1=[ ]
case 'A':
case 'E':
case 'I':
case 'O':
case 'U':
    printf("Vowel");
    break;
default:
    printf("Consonant");
}
getch();
return 0;
}
46:1
F1 Help F2 Save F3 Open Alt-F9 Compile F9 Make F10 Menu
```

Enter any alphabet: n  
Consonant

Enter any alphabet: a  
Vowel\_

Enter any alphabet: u  
Vowel\_

**QUES 20) WRITE A PROGRAM TO PRINT THE MULTIPLES OF A ENTERED NUMBER.**

The screenshot shows a terminal window with a dark blue background. At the top, there is a menu bar with options: File, Edit, Search, Run, Compile, Debug, Project, Options, Window, and Help. Below the menu bar, the title bar displays "LAB1HA~1\MULTIPLE.CPP". The status bar at the bottom shows "1:1" and various keyboard shortcuts like F1 Help, Alt-F8 Next Msg, Alt-F7 Prev Msg, Alt-F9 Compile, F9 Make, and F10 Menu.

The main content of the window is a C++ program:

```
#include <stdio.h>
#include <conio.h>
int main()
{
    int x, i;
    clrscr();
    printf("Input an integer: ");
    scanf("%d", &x);
    for(i = 1; i <= 100; i++)
    {
        if((i*x) == 3)
        {
            printf("%d\n", i);
        }
    }
    getch();
    return 0;
}
```

When the program is run, it prompts the user for an integer. The user enters "7". The program then prints the multiples of 7 up to 700. The output is as follows:

```
Input an integer: 7
3
10
17
24
31
38
45
52
59
66
73
80
87
94
-
```

```
Input an integer: 8
```

```
3  
11  
19  
27  
35  
43  
51  
59  
67  
75  
83  
91  
99
```

```
Input an integer: 12
```

```
3  
15  
27  
39  
51  
63  
75  
87  
99
```

```
-
```

**QUES 21) WRITE A PROGRAM TO CALCULATE THE SUM OF SQUARES OF FIRST N ODD NUMBERS.**

The screenshot shows a C++ development environment with the following details:

- Menu Bar:** File, Edit, Search, Run, Compile, Debug, Project, Options, Window, Help.
- Project Path:** LAB1HA~1\SUMOFS~1.CPP
- Code Editor:** The code is written in C/C++ and calculates the sum of squares of the first *n* odd numbers. It includes `#include <stdio.h>`, `#include <conio.h>`, and a `main()` function that prompts the user for a number, calculates the sum, and prints the result.
- Terminal Output:** The terminal window shows the program's output after running it. It asks for input ("enter the number 9") and then displays the result ("The sum of square of first 9 odd numbers is 969").
- Status Bar:** Shows "4:1" and other standard IDE status indicators.
- Bottom Bar:** Shows keyboard shortcuts for F1 through F10 and their corresponding functions.

```
#include <stdio.h>
#include <conio.h>
int main()
{
    int n = 0,sum=0;
    clrscr();
    printf("enter the number ");
    scanf("%d",&n);
    for (int i = 1; i <= n; i++)
        sum += (2*i - 1) * (2*i - 1);
    printf("The sum of square of first %d odd numbers is %d",n, sum);
    getch();
    return 0;
}
```

F1 Help F2 Save F3 Open Alt-F9 Compile F9 Make F10 Menu  
enter the number 9  
The sum of square of first 9 odd numbers is 969

enter the number 6

The sum of square of first 6 odd numbers is 286

enter the number 13

The sum of square of first 13 odd numbers is 2925\_

**QUES 22) WRITE A PROGRAM TO CALCULATE THE HIGHEST IN SUBJECTS BY 4 STUDENTS.**

```
#include <stdio.h>
#include <conio.h>
int main()
{
    int marks[4][3], i, j, max_marks;
    clrscr();
    for(i=0; i<4; i++)
    {
        printf(" \n ENTER THE MARKS OBTAINED BY THE STUDENT %d ", i);
        for(j=0; j<3; j++)
        {
            printf(" \n marks[%d][%d] = ", i, j);
            scanf("%d", &marks[i][j]);
        }
    }
    for(j=0; j<3; j++)
    {
        max_marks = marks[0][j];
        for(i=1; i<4; i++)
        {
            if(marks[i][j]>max_marks)
                max_marks = marks[i][j];
        }
        printf(" \n THE HIGHEST MARKS OBTAINED IN THE SUBJECT %d = %d ", j, max_marks);
    }
    getch();
    return 0;
}
```

```
ENTER THE MARKS OBTAINED BY THE STUDENT 0
marks[0][0] = 4

marks[0][1] = 2

marks[0][2] = 7

ENTER THE MARKS OBTAINED BY THE STUDENT 1
marks[1][0] = 4

marks[1][1] = 6

marks[1][2] = 8

ENTER THE MARKS OBTAINED BY THE STUDENT 2
marks[2][0] = 5

marks[2][1] = 4

marks[2][2] = 3

ENTER THE MARKS OBTAINED BY THE STUDENT 3
marks[3][0] = 6
```

```
ENTER THE MARKS OBTAINED BY THE STUDENT 1
marks[1][0] = 4

marks[1][1] = 6

marks[1][2] = 8

ENTER THE MARKS OBTAINED BY THE STUDENT 2
marks[2][0] = 5

marks[2][1] = 4

marks[2][2] = 3

ENTER THE MARKS OBTAINED BY THE STUDENT 3
marks[3][0] = 6

marks[3][1] = 6

marks[3][2] = 4

THE HIGHEST MARKS OBTAINED IN THE SUBJECT 0 = 6
THE HIGHEST MARKS OBTAINED IN THE SUBJECT 1 = 6
THE HIGHEST MARKS OBTAINED IN THE SUBJECT 2 = 8
```

```
ENTER THE MARKS OBTAINED BY THE STUDENT 0  
marks[0][0] = 43
```

```
marks[0][1] = 56
```

```
marks[0][2] = 89
```

```
ENTER THE MARKS OBTAINED BY THE STUDENT 1  
marks[1][0] = 56
```

```
marks[1][1] = 2
```

```
marks[1][2] = 7
```

```
ENTER THE MARKS OBTAINED BY THE STUDENT 2  
marks[2][0] = 3
```

```
marks[2][1] = 5
```

```
marks[2][2] = 78
```

```
ENTER THE MARKS OBTAINED BY THE STUDENT 3  
marks[3][0] = 4
```

```
ENTER THE MARKS OBTAINED BY THE STUDENT 1  
marks[1][0] = 56
```

```
marks[1][1] = 2
```

```
marks[1][2] = 7
```

```
ENTER THE MARKS OBTAINED BY THE STUDENT 2  
marks[2][0] = 3
```

```
marks[2][1] = 5
```

```
marks[2][2] = 78
```

```
ENTER THE MARKS OBTAINED BY THE STUDENT 3  
marks[3][0] = 4
```

```
marks[3][1] = 56
```

```
marks[3][2] = 85
```

```
THE HIGHEST MARKS OBTAINED IN THE SUBJECT 0 = 56
```

```
THE HIGHEST MARKS OBTAINED IN THE SUBJECT 1 = 56
```

```
THE HIGHEST MARKS OBTAINED IN THE SUBJECT 2 = 85
```

```
ENTER THE MARKS OBTAINED BY THE STUDENT 0  
marks[0][0] = 34
```

```
marks[0][1] = 6
```

```
marks[0][2] = 2
```

```
ENTER THE MARKS OBTAINED BY THE STUDENT 1  
marks[1][0] = 87
```

```
marks[1][1] = 65
```

```
marks[1][2] = 5
```

```
ENTER THE MARKS OBTAINED BY THE STUDENT 2  
marks[2][0] = 56
```

```
marks[2][1] = 8
```

```
marks[2][2] = 3
```

```
ENTER THE MARKS OBTAINED BY THE STUDENT 3  
marks[3][0] = ?
```

```
ENTER THE MARKS OBTAINED BY THE STUDENT 1  
marks[1][0] = 87
```

```
marks[1][1] = 65
```

```
marks[1][2] = 5
```

```
ENTER THE MARKS OBTAINED BY THE STUDENT 2  
marks[2][0] = 56
```

```
marks[2][1] = 8
```

```
marks[2][2] = 3
```

```
ENTER THE MARKS OBTAINED BY THE STUDENT 3  
marks[3][0] = 7
```

```
marks[3][1] = 6
```

```
marks[3][2] = 8
```

```
THE HIGHEST MARKS OBTAINED IN THE SUBJECT 0 = 87
```

```
THE HIGHEST MARKS OBTAINED IN THE SUBJECT 1 = 65
```

```
THE HIGHEST MARKS OBTAINED IN THE SUBJECT 2 = 65
```

### QUES 23) WRITE A PROGRAM TO PERFORM ADDITION OF TWO MATRICES.

```
[ ] File Edit Search Run Compile Debug Project Options Window Help LAB1HA~1\WRITEA~1.CPP 1=[ ]
#include <stdio.h>
#include <conio.h>
int main()
{
    int r, c, a[100][100], b[100][100], sum[100][100], i, j;
    clrscr();
    printf("Enter the number of rows (between 1 and 100): ");
    scanf("%d", &r);
    printf("Enter the number of columns (between 1 and 100): ");
    scanf("%d", &c);
    printf("\nEnter elements of 1st matrix:\n");
    for (i = 0; i < r; ++i)
        for (j = 0; j < c; ++j)
    {
        printf("Enter element a%d%d: ", i + 1, j + 1);
        scanf("%d", &a[i][j]);
    }
    printf("\nEnter elements of 2nd matrix:\n");
    for (i = 0; i < r; ++i)
        for (j = 0; j < c; ++j)
    {
        printf("Enter element b%d%d: ", i + 1, j + 1);
        scanf("%d", &b[i][j]);
    }
    for (i = 0; i < r; ++i)
        for (j = 0; j < c; ++j)
    {
        sum[i][j] = a[i][j] + b[i][j];
    }
    printf("\nSum of two matrices:\n");
    for (i = 0; i < r; ++i)
        for (j = 0; j < c; ++j)
    {
        printf("%d ", sum[i][j]);
        if (j == c - 1)
        {
            printf("\n\n");
        }
    }
    getch();
}
* 4:1 [ ]
F1 Help Alt-F8 Next Msg Alt-F7 Prev Msg Alt-F9 Compile F9 Make F10 Menu
[ ] File Edit Search Run Compile Debug Project Options Window Help LAB1HA~1\WRITEA~1.CPP 1=[ ]
for (j = 0; j < c; ++j)
{
    printf("Enter element b%d%d: ", i + 1, j + 1);
    scanf("%d", &b[i][j]);
}
for (i = 0; i < r; ++i)
for (j = 0; j < c; ++j)
{
    sum[i][j] = a[i][j] + b[i][j];
}
printf("\nSum of two matrices:\n");
for (i = 0; i < r; ++i)
for (j = 0; j < c; ++j)
{
    printf("%d ", sum[i][j]);
    if (j == c - 1)
    {
        printf("\n\n");
    }
}
getch();
}
* 40:1 [ ]
F1 Help Alt-F8 Next Msg Alt-F7 Prev Msg Alt-F9 Compile F9 Make F10 Menu
```

```
File Edit Search Run Compile Debug Project Options Window Help
LAB1HA~1\WRITEA~1.CPP 1=[t]
    scanf("%d", &b[i][j]);
}
for (i = 0; i < r; ++i)
for (j = 0; j < c; ++j)
{
    sum[i][j] = a[i][j] + b[i][j];
}
printf("nSum of two matrices: n");
for (i = 0; i < r; ++i)
for (j = 0; j < c; ++j)
{
    printf("%d ", sum[i][j]);
    if (j == c - 1)
    {
        printf("nn");
    }
}
getch();
return 0;
}
* 43:1 =
F1 Help Alt-F8 Next Msg Alt-F7 Prev Msg Alt-F9 Compile F9 Make F10 Menu
Enter the number of rows (between 1 and 100): 2
Enter the number of columns (between 1 and 100): 2

Enter elements of 1st matrix:
Enter element a11: 4
Enter element a12: 6
Enter element a21: 7
Enter element a22: 5
Enter elements of 2nd matrix:
Enter element b11: 7
Enter element b12: 8
Enter element b21: 6
Enter element b22: 5

Sum of two matrices:
11 14
13 10
-
```

```
Enter the number of rows (between 1 and 100): 2
Enter the number of columns (between 1 and 100): 3
```

```
Enter elements of 1st matrix:
```

```
Enter element a11: 4
```

```
Enter element a12: 6
```

```
Enter element a13: 7
```

```
Enter element a21: 4
```

```
Enter element a22: 6
```

```
Enter element a23: 8
```

```
Enter elements of 2nd matrix:
```

```
Enter element b11: 3
```

```
Enter element b12: 5
```

```
Enter element b13: 7
```

```
Enter element b21: 98
```

```
Enter element b22: 5
```

```
Enter element b23: 6
```

```
Sum of two matrices:
```

```
7 11 14
```

```
102 11 14
```

---

```
-
```

```
Enter the number of rows (between 1 and 100): 3
Enter the number of columns (between 1 and 100): 3
```

```
Enter elements of 1st matrix:
```

```
Enter element a11: 5
```

```
Enter element a12: 7
```

```
Enter element a13: 8
```

```
Enter element a21: 6
```

```
Enter element a22: 4
```

```
Enter element a23: 3
```

```
Enter element a31: 5
```

```
Enter element a32: 6
```

```
Enter element a33: 7
```

```
Enter elements of 2nd matrix:
```

```
Enter element b11: 8
```

```
Enter element b12: 8
```

```
Enter element b13: 8
```

```
Enter element b21: 6
```

```
Enter element b22: 4
```

```
Enter element b23: 3
```

```
Enter element b31: 7
```

```
Enter element b32: 4
```

```
Enter element b33: 45
```

```
Enter element a21: 6
Enter element a22: 4
Enter element a23: 3
Enter element a31: 5
Enter element a32: 6
Enter element a33: 7
Enter elements of 2nd matrix:
Enter element b11: 8
Enter element b12: 8
Enter element b13: 8
Enter element b21: 6
Enter element b22: 4
Enter element b23: 3
Enter element b31: 7
Enter element b32: 4
Enter element b33: 45
```

```
Sum of two matrices:
```

```
13 15 16
```

```
12 8 6
```

```
12 10 52
```

**QUES 24) WRITE A PROGRAM TO PRINT THE SMALLEST AMONG 3 NUMBERS.**

```
#include<stdio.h>
#include<conio.h>
int main()
{
    int a, b, c, small;
    clrscr();
    printf("Enter three numbers : ");
    scanf("%d%d%d", &a, &b, &c);
    if(a<b)
    {
        if(b<c)
            small = a;
        else
        {
            if(a<c)
                small = a;
            else
                small = c;
        }
    }
    else
    {
        if(b<c)
            small = a;
        else
        {
            if(a<c)
                small = a;
            else
                small = c;
        }
    }
    printf("\nSmallest number is: %d", small);
    getch();
    return 0;
}
```

```
Enter three numbers : 6
```

```
78
```

```
45
```

```
Smallest number is: 6
```

```
Enter three numbers : 2
```

```
4
```

```
7
```

```
Smallest number is: 2
```

```
Enter three numbers : 12
```

```
657
```

```
43
```

```
Smallest number is: 12_
```