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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 like 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 interface 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:

```
File Edit Search Run Compile Debug Project Options Window Help
[ ] LAB1\A~1\DISTAN~1.CPP 1=[ ]
#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;
}

1:1
F1 Help Alt-F8 Next Msg Alt-F7 Prev Msg Alt-F9 Compile F9 Make F10 Menu
```

Below the code, the terminal prompt "Enter point 1 (x1, y1)" is displayed, followed by the user input "2" and "6". The next prompt "Enter point 2 (x2, y2)" is shown, followed by the user input "4" and "0". The final output "Distance between (2.00, 6.00) and (4.00, 0.00) is 6.32" is displayed at the bottom of the terminal window.

```
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 C++ development environment with the following details:

- File Menu:** File, Edit, Search, Run, Compile, Debug, Project, Options, Window, Help.
- Title Bar:** LAB1HA~1\AUGOF3~1.CPP
- Code Editor:** 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;
}
```
- Status Bar:** Shows "1:1" and a small icon.
- Toolbar:** F1 Help, F2 Save, F3 Open, Alt-F9 Compile, F9 Make, F10 Menu.
- Output Window:** Displays the program's execution:

```
Enter three Numbers: 3
7.5
7
Entered numbers are: 3.00, 7.50 and 7.00
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 the following content:

```
File Edit Search Run Compile Debug Project Options Window Help
[ ] LAB1HA~1\AUERAG~1.CPP 1=[ ]
#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);
}

1:1 F1 Help Alt-F8 Next Msg Alt-F7 Prev Msg Alt-F9 Compile F9 Make F10 Menu
Enter three numbers:2
7
5
Average=4.666667_
```

The terminal window has a dark blue background and light blue text. It displays the source code of a C++ program named "AUERAG~1.CPP". The program defines a main function and a separate avg function. The avg function calculates the average of three integers passed to it. The main function prompts the user to enter three numbers, reads them using scanf, calls the avg function, and then prints the result using printf. The terminal also shows the command-line interface with various keyboard shortcuts like F1, Alt-F8, and Alt-F9.

```
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.

The image shows a dual-pane code editor with two panes displaying the same C++ program. The top pane is at line 28:5 and the bottom pane is at line 31:5. Both panes have identical menu bars and status bars.

```
#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 indicates the current file is "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 from 2 to 42, separated by newlines.

```
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.
- File Path:** 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:** 17:4, F1 Help, F2 Save, F3 Open, Alt-F9 Compile, F9 Make, F10 Menu.
- 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 title bar displays the file name "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 "1:1" is visible, followed by the command "Enter temperature in Fahrenheit: 104". The output of the program is shown as "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 current file is shown as "LAB1HA~1\FACTOR~1.CPP". The status bar at the bottom displays the time "16:13" and various keyboard shortcuts like F1 Help, Alt-F8 Next Msg, etc.

```
#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;
}
```

The terminal output shows the user entering the number 7 and the program outputting the factorial of 7, which 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 screenshot of a C++ development environment with two windows side-by-side, both displaying the same code for calculating the area of a triangle.

Top Window (Editor View):

```
#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;
}
```

Bottom Window (Output View):

```
#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;
}
```

The code in both windows is identical, defining a function `area_of_triangle` that calculates the area of a triangle given its three sides `a`, `b`, and `c` using Heron's formula. The `main` function prompts the user for the side lengths, calls the function, and prints the result.

```
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.");
}

```

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 output is displayed below the status bar. It shows the prompt "Enter a number: -7" followed by the message "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.

```
File Edit Search Run Compile Debug Project Options Window Help
[ ] LAB1HA~1\MTDN.CPP 1=[ ]
#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;
}
1:1
F1 Help Alt-F8 Next Msg Alt-F7 Prev Msg Alt-F9 Compile F9 Make F10 Menu
Print all even numbers from 4
to 23
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.

```
#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);
    }
}
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:

- Menu Bar:** File, Edit, Search, Run, Compile, Debug, Project, Options, Window, Help.
- File Path:** 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(). It uses printf for input and output, scanf for input, and getch() for a delay.
- Status Bar:** Shows F1 Help, F2 Save, F3 Open, Alt-F9 Compile, F9 Make, F10 Menu.
- Output Window:** Displays the user input "ENTER INTEGER NUMBER :7" and the program output "THE SUM OF SQUARE OF ODD NOS. TILL 7 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 toolbar with F1 through F10 keys and a menu button.
- 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-panel integrated development environment (IDE) interface. Both panels display the same C++ program code for swapping the largest and smallest elements in an array of five integers.

```
#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();
}
```

The code performs the following steps:

- Includes `<stdio.h>` and `<conio.h>`.
- Defines a function `main`.
- Declares an array `a[5]` and variables `max`, `min`, `maxpos`, `minpos`, and `temp`.
- Clears the screen using `clrscr()`.
- Prompts the user to enter 5 integers using `printf` and `scanf`.
- Initializes `max` and `min` to the first element of the array.
- Initializes `maxpos` and `minpos` to the index of the first element.
- Iterates through the array from index 1 to 4, comparing each element with `max` and `min`. If greater than `max`, it becomes the new `max` and its index becomes `maxpos`. If less than `min`, it becomes the new `min` and its index becomes `minpos`.
- Swaps the values at `maxpos` and `minpos` using a temporary variable `temp`.
- Prints the array elements after interchange using `printf`.
- Waits for user input using `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.

The screenshot shows a dual-pane IDE interface. Both panes display the same C++ code for determining if a character is a vowel or consonant. The code uses a switch statement to check if the input character is one of the five vowels ('a', 'e', 'i', 'o', 'u'). If it is, it prints 'Vowel'; otherwise, it prints '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':
            printf("Vowel");
            break;
        default:
            printf("Consonant");
    }
}
```

The screenshot shows a window titled "LAB1HA~1\FINDWH~1.CPP" with a menu bar including File, Edit, Search, Run, Compile, Debug, Project, Options, Window, and Help. The code in the editor is as follows:

```
case 'A':  
case 'E':  
case 'I':  
case 'O':  
case 'U':  
    printf("Vowel");  
    break;  
default:  
    printf("Consonant");  
}  
getch();  
return 0;  
}
```

The status bar at the bottom indicates "46:1". Below the window, a command-line interface shows the output of the program:

```
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 code area contains the following 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:

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

```
#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;
}
```
- Status Bar:** 4:1
- Toolbar:** F1 Help, F2 Save, F3 Open, Alt-F9 Compile, F9 Make, F10 Menu
- Output Window:** 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 PRINT A PATTERN FOR ENTERED N.

The screenshot shows a C++ IDE interface with the following details:

- Menu Bar:** File, Edit, Search, Run, Compile, Debug, Project, Options, Window, Help.
- Project Path:** LAB1HA~1\PROGRA~1.CPP
- Code Editor:** The code is written in C/C++ and prints a pattern of numbers. It includes headers `#include <stdio.h>` and `#include <conio.h>`. The `main` function prompts for input, reads it into `N`, and then prints a pattern where each row contains `N` decreasing numbers from `k = (i * 2) - 1` down to 1. The pattern is:#include <stdio.h>
#include <conio.h>
int main()
{
 int i, j, k, N;
 clrscr();
 printf("Enter N: ");
 scanf("%d", &N);
 for(i=1; i<=N; i++)
 {
 k = (i * 2) - 1;
 for(j=i; j<=N; j++, k-=2)
 {
 printf("%d", k);
 }
 printf("\n");
 }
 getch();
 return 0;
}
- Output Window:** Shows the user input "Enter N: 5" and the resulting output:

```
13579
3579
579
79
9
-
```
- Bottom Bar:** F1 Help, Alt-F8 Next Msg, Alt-F7 Prev Msg, Alt-F9 Compile, F9 Make, F10 Menu.

Enter N: 3

135

35

5

-

Enter N: 4

1357

357

57

7

QUES 23) 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 24) WRITE A PROGRAM TO PERFORM ADDITION OF TWO MATRICES.

```
#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();
}
```

```
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
```