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**FAST NUCES QUESTIONS**

The factorial is calculated by multiplying the original number by all the positive integers smaller than itself. Thus, the factorial of 5 is 5\*4\*3\*2\*1 = 120. Write a C++ program to calculate factorial, of any number given by user. (Using while loop).

#include<iostream>

using namespace std;

int main()

{

int num = 5,fact = 1;

int i = 1;

while (i <= num)

{

fact = fact \* i;

i++;

}

cout << "Fact = " << fact;

return 0;

}

Write a C++ program that inputs from user an integer and prints to the screen the table of that number up to 10 multiples. (Implement this program by using while loop)

#include<iostream>

using namespace std;

int main()

{

int i = 1;

int num = 5;

while (i <= 10)

{

cout << num << " x " << i<<" = " << num \* i<<endl;

i++;

}

return 0;

}

Write a C++ program that inputs from user an integer and prints to the screen the table of that number up to 10 multiples. (Implement this program by using for loop)

#include<iostream>

#include<iomanip>

using namespace std;

int main()

{

int num = 5;

for (int i = 1; i <= 10; i++)

{

cout << num << " x " << i <<" = " << num \* i << endl;

}

return 0;

}

Write a C++ program that read a positive integer value, and compute the following sequence: If the number is even, halve it; if it's odd, multiply by 3 and add 1. Repeat this process until the value is 1, printing out each value. Finally, print out how many of these operations you performed.

#include<iostream>

#include<iomanip>

using namespace std;

int main()

{

int num,i;

cout << "Enter initial number : ";

cin >> num;

for ( i = 1;num!=1; i++)

{

if (num % 2 == 0)

num = num / 2;

else

num = (num \* 3) + 1;

if (num == 1)

cout << "Final value is " << num<<endl;

else

cout << "The number is "<<num << endl;

}

i = i - 1;

cout << "Total numbers:" << i;

return 0;

}

Write a program that prompts the user to input a length expressed in centimeters. The program should then convert the length to inches (to the nearest inch) and output the length expressed in yards, feet, and inches, in that order.

For example, suppose the input for centimeters is 312. To the nearest inch, 312 centimeters is equal to 123 inches. 123 inches would thus be output as:

3 yard(s), 1 feet (foot), and 3 inches).

**Hint:**

1 Inch = 2.54 Centimeters

1 Foot = 12 Inches

1 Yard = 36 Inches

#include<iostream>

#include<iomanip>

using namespace std;

int main()

{

double centi,y;

int yards, inches,foots;

cout << "Enter the length in centimeters :";

cin >> centi;

y = centi / 2.54;

inches = round(y);

yards = inches / 36;

inches = inches % 36;

foots = inches / 12;

inches = inches % 12;

cout << "yards = "<<yards<<" foots = "<<foots<<" inches = "<<inches;

return 0;

}

1. Write a C++ program that prompts the user to input the elapsed time for an event in hours, minutes, and seconds. The program then outputs the elapsed time in seconds.
2. #include<iostream>
3. using namespace std;
4. int main()
5. {
6. int hours, min, sec,tsec;
7. cout << "Enter the no. of hours :";
8. cin >> hours;
9. tsec = hours \* 3600;
10. cout << "Enter the no. of minutes :";
11. cin >> min;
12. tsec =tsec+ min \* 60;
13. cout << "Enter the no. of seconds :";
14. cin >> sec;
15. tsec = tsec+sec;
16. cout << "Total seconds are :" << tsec;
17. return 0;
18. }
19. Write a C++ program that prompts the user to input the elapsed time for an event in seconds. The program then outputs the elapsed time in hours, minutes, and seconds. (For example, if the elapsed time is 9630 seconds, then the output is 2:40:30.)
20. #include<iostream>
21. using namespace std;
22. int main()
23. {
24. int sec,hour,min;
25. cout << "Enter total seconds :";
26. cin >> sec;
27. hour = sec / 3600;
28. sec = sec % 3600;
29. min = sec / 60;
30. sec = sec % 60;

cout << "Hours = " << hour << " Minutes = " << min << " Seconds = " << sec;

1. return 0;
2. }

Question 1: Write a complete C++ program (with proper comments and indentations) to calculate and print

the product of two numbers entered by the user without using the multiplication (\*) operator.

#include<iostream>

using namespace std;

int main()

{

int a, b,sum=0;

cout << "enter two numbers:";

cin >> a >> b; //add 1st number till limit of 2nd number

for (int i = 1; i <= b; i++)

{

sum = sum + a;

}

cout << "Product of two numbers without \* operator is " << sum;

return 0;

}

Question 2: The population of Lahore is less than the population of Karachi. However, the population of

Lahore is growing faster than Karachi. Write a complete C++ program (with proper comments and

indentations) that asks the user to input the population (number) and growth rate (percentage) of each city

(total 4 inputs). The program first checks whether the data entered by the user is correct (population of

Lahore is lower than population of Karachi and growth rate of Lahore is higher than Karachi). The program

then calculates and prints after how many years the population of Lahore will surpass the population of

Karachi and the populations of both the cities at that time.

A sample input/output of the program is given below.

*Population of Lahore = 7000*

*Growth rate of Lahore = 5%*

*Population of Karachi = 10000*

*Growth rate of Karachi = 2%*

*Lahore population will surpass Karachi after 13 years*

*Total population of Lahore at that time: 13191*

*Total population of Karachi at that time: 12930*

*Lahore will have 261 more people than Karachi*

*Total population would be 26121*

#include<iostream>

using namespace std;

int main()

{

int L\_population, G\_lahore,sum;

int K\_population, G\_karachi,SUM;

int i = 1;

cout << "Enter population of Lahore :";

cin >> L\_population;

cout << "Growth rate of Lahore :";

cin >> G\_lahore;

cout << "Enter population of Karachi :";

cin >> K\_population;

cout << "Growth rate of Larachi :";

cin >> G\_karachi;

if ((L\_population < K\_population) && (G\_lahore > G\_karachi))

{

while (L\_population < K\_population)

{

sum = L\_population \* (G\_lahore/(float)100);

L\_population = sum + L\_population;

SUM = K\_population \* (G\_karachi/(float)100);

K\_population = SUM + K\_population;

i++;

}

i = i - 1;

cout << "Lahore population will surpass after " << i << " years."<<endl;

cout << "Total population of Lahore at that time = " << L\_population<<endl;

cout << "Total population of Karachi at that time = " << K\_population<<endl;

cout << "Lahore will have " << L\_population - K\_population << " more people than Karachi"<<endl;

cout << "Total population would be " << L\_population + K\_population;

}

else

cout << "Invalid";

return 0;

}

**Question 2: [Marks: 20]**

You have to develop a restaurant order payment application. For Example, your restaurant is offering the following meals.

|  |  |  |
| --- | --- | --- |
| **Code** | **Meal** | **Per kg Price in Pakistani rupees** |
| 1 | **Chicken Handi** | **1800** |
| 2 | **Chicken Karahi** | **2000** |
| 3 | **Chicken Tikka** | **2200** |
| 4 | **Chicken Haleem** | **500** |
| 5 | **Creamy Chicken** | **2500** |

Your program should print the name of dishes along with their corresponding codes so that a user can select one of the dishes by using its code. For example, if the user selects code 1, then it means Chicken Handi, 2 means Chicken Karahi, so on and so forth. If the user has entered an invalid code, your program will print some error message and terminate.

After the user has been asked the dish that he wants to buy, your program will ask the user to enter the quantity of the dish that he wants to buy in kilograms. The quantity will be greater than 0. If the user has entered an invalid quantity, then print some error message and terminate the program. After that, the program should ask from the user about currency in which he/she wants to give payment. For this assignment, you are required to use three currencies. One is Pakistani rupee, second is dollar and the last one is euro. Use 1 for Pakistani rupee, 2 for euro, and 3 for dollar. If the user has entered an invalid option, then your program will print some error message and terminate.

After that, your program will calculate the meal price, sales tax on the meal price and total price of the meal (calculated after adding meal price and sales tax).

For calculating sales tax, you can use meal price in rupees which is hard coded in this case, and calculate sales tax on it using the table given below.

|  |  |
| --- | --- |
| **Meal Price** | **Sales Tax applicable** |
| Less than or equal to 1000 | No sales Tax on it. |
| Greater than 1000 and less than or  equal to 3000 | 2% of meal price. |
| Greater than 3000 | 5% of meal price. |

After calculating the sales tax, the program will calculate the total amount or price payable by using the following formula:

**Total \_Amount = Meal\_Price + Sales\_Tax**

**Hint:** You can calculate everything in Pakistani rupees, and then convert them into the desired currency.

After calculating the total amount in rupees, you are required to convert the amount into the desired currency (based on the user’s choice). For example, if the user selected rupees then simply display final price, i.e., (Total Amount = Meal\_Price + Sales\_Tax) in rupees but if the user selected dollar or euro, then simply convert the final meal price that you calculated earlier (in rupees) into dollar or euro according to the currency exchange rate. Also display the amount of sales tax and the meal price excluding sales tax.

**Note:**

Use current exchange rate for this assignment as given below:

|  |  |
| --- | --- |
| 1 dollar | 165 rupees |
| 1 euro | 193 rupees |
|  |  |
|  |  |
|  |  |
|  |  |



#include<iostream>

#include<iomanip>

using namespace std;

int main ()

{

int choice,currency;

double quantity,mealprice,salestax,total;

cout <<"Code"<<" Meal"<<"\t\tPer kg Price in Pakistani rupee"<<endl;

cout << "1" << " Chicken Handi" << "\t\t1800"<<endl;

cout << "2" << " Chicken Karahi" << "\t\t2000"<<endl;

cout << "3"<< " Chicken Tikka" << "\t\t2200"<<endl;

cout << "4" << " Chicken Haleem" << "\t\t500"<<endl;

cout << "5" << " Creamy Chicken" << "\t\t2500"<<endl;

int m1 = 1800, m2 = 2000, m3 = 2200, m4 = 500, m5 = 2500;

cout << "\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*"<<endl;

cout << "Please enter your choice :";

cin >> choice;

if (choice < 1 || choice>5)

return 0;

cout << "\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*" << endl;

cout << "Please enter quantity in kgs :";

cin >> quantity;

if (quantity <= 0)

return 0;

cout << "\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*" << endl;

cout << "Please enter the currency in which you want to pay:"<<endl;

cout << "1\t\tPkr\n2\t\tDollar\n3\t\tEuro"<<endl;

cin >> currency;

cout << "\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*" << endl;

if (choice == 1)

mealprice = m1 \* quantity;

else if (choice == 2)

mealprice = m2 \* quantity;

else if (choice == 3)

mealprice = m3 \* quantity;

else if (choice == 4)

mealprice = m4 \* quantity;

else if (choice == 5)

mealprice = m5 \* quantity;

else

cout << "Invalid";

if (mealprice>=0&&mealprice <= 1000)

salestax = 0;

else if (mealprice > 1000 && mealprice<=3000)

salestax = 2;

else

salestax = 5;

if (currency == 1)

mealprice = mealprice;

else if (currency == 2)

mealprice = mealprice / 165;

else if (currency == 3)

mealprice = mealprice / 193;

salestax = mealprice \* (salestax/100);

total = salestax + mealprice;

cout << "Meal Price : " << mealprice<<endl;

cout << "Sales Tax: "<< salestax<<endl;

cout << "Total Price: " << total;

return 0;

}

Write a program which will take at max: a six digit number and output each of its digit in words, (Bonus) if the number is less than 6 digits it should not out print initial zeros. If the number is greater than 6 digits then it should output wrong input.

**Sample Input:** 651432 **Output:** Six Five One Four Three two (**Bonus**) Sample Input: 1432 Sample Output: One Four Three two.

**This code was written by own but take help from chatgpt for handling zeros after the number but the concept (reverse the number and print it) was my own.**

#include<iostream>

using namespace std;

void printstring(int digit)

{

switch (digit)

{

case 0: cout << "Zero "; break;

case 1: cout << "One "; break;

case 2: cout << "Two "; break;

case 3: cout << "Three "; break;

case 4: cout << "Four "; break;

case 5: cout << "Five "; break;

case 6: cout << "Six "; break;

case 7: cout << "Seven "; break;

case 8: cout << "Eight "; break;

case 9: cout << "Nine "; break;

}

}

int main()

{

int num, rem, y = 0, m, trailing\_zeros = 0;

cout << "Enter a number (at most 6 digits): ";

cin >> num;

if (num > 999999 || num < 0)

{

cout << "Invalid number";

}

else

{

while (num % 10 == 0 && num != 0)

{

trailing\_zeros++;

num /= 10;

}

while (num != 0)

{

rem = num % 10;

y = (y \* 10) + rem;

num = num / 10;

}

while (y != 0)

{

m = y % 10;

printstring(m);

y = y / 10;

}

for (int i = 1; i <= trailing\_zeros; i++)

{

printstring(0);

}

}

return 0;

}

Write a program which takes as input 3 points and tell whether these points are the coordinates of isosceles or equilateral or right angled or scalene triangle.

Take 4 coordinates of the Rectangle and a point P. Your program should be able to tell whether P lies inside the Rectangle or Not