QUIZ QUESTION BANK

Mohammad-Hamdan 0788592929

ملاحظة قبل ما تبلّش:
هاي الأسئلة انكتبت عشان تساعدك وتخلّيك تراجع المادة بأفضل طريقة. خُد وقتك، حلّهم كلّهم، حتى لو حسّيت بعضهم صعب ...*لأن كل سؤال هون رح يرفع مستواك ويحسّنك أكتر وأكتر* 🔥💪 .
كمل للنهاية... وخلّيك واثق إن تعبك هون رح يثمر بالامتحان🌟🚀 !

2025\3\8
C++
By Mohammad hamdan

رابط قناتي على يوتيوب:

اشترك الان

Which one of the following is an *illegal identifier* in C++?

a. _course
b. coUrse
c. !course
d. Coures

✅ **Correct Answer: c. !course**

What is the output of the following C++ code, assuming all required libraries are already included?
The user input is:

xy19 rt5.5

```
string s;

char c1 = 'q', c2;

int var = 4;

cin >> s;

cin.get(c1);

cin.get(c2);

cin >> c1 >> var >> c2;


cout << s << " " << var << " " << c1 << " " << c2;
```

✅ **Options:**

a. input failure
b. xy19 5 r 0
c. xy 1 q t
d. xy19 4 5 .

✅ **Correct Answer: d. xy19 4 5 .**

What is the output after running the following C++ statement?

```
cout << static_cast<int>(45.5) % 5 - 5;
```

✅ **Options:**

a. -5
b. 0
c. 5
d. none of the above

✅ **Correct Answer: a. -5**

What is the value of the variable total after executing the following C++ code? Assume all necessary libraries are included.

```
int x = 8, y = 5, total = 0;

total = y++ + 2 + (--x * 4) % 5;
```

✅ **Options:**

a. 6
b. 8
c. -6
d. -8

✅ **Correct Answer: a. 6**

What is the output of the following C++ code?
Assume all necessary libraries are included.
The user input is:

```
student123 42xyz
```

```
string str;

char ch1 = 'w', ch2 = 'q';

int num1 = 20, num2 = 0;


cin >> str;

cin.get(ch1);

cin.get(ch2);

cin >> num1 >> num2;


cout << str << " " << num1 << " " << ch1 << " " << ch2 << " " << num2 << endl;
```

Options:

A. student123 42 w q 0
B. student123 2 4 0
C. student123 42 4 0
D. student123 2 4 x 0

Correct Answer: ✅ **C. student123 42 4 0**

What is the value stored in each of the following variables (x, c, and b) after the cin statement is executed?
Assume all required libraries are already included.
The user input is:

```
245.73
```

```
int x, y, z;

char c;
```

```
double a, b;

cin >> x >> c >> b;
```

Options:

a. All answers are incorrect
b. x = 245, c = '.' , b = 0.73
c. x = 24 , c = '5' , b = 73.0
d. x = 245 , c = ' ' , b = 0.73
e. x = 245 , c = '.' , b = 73.0

✅ **Correct Answer: e. x = 245 , c = '.' , b = 73.0**

What is the output of the following C++ statements?
Assume all necessary libraries are included.
The user input is:

```
alpha_22 63kg
```

```
string str;

char ch1 = 'w', ch2 = 'q';

int num1 = 20, num2 = 0;

cin >> str;

cin.get(ch1);

cin.get(ch2);

cin >> ch1 >> num1 >> num2;

cout << str << " " << num1 << " " << ch1 << " " << ch2 << " " << num2 << endl;
```

Options:

a. alpha_22 63 k 0
b. alpha_22 3 6 k 0
c. alpha_22 63 6 0
d. alpha_22 63 k 0

✅ **Correct Answer: d. alpha_22 63 k 0**

Which is the correct syntax to open grades.txt file for output?

A. open.read (“grades.txt”);

B. All Answers Not Correct

C. open.write (grades.txt);

D. write.open (“grades.txt”);

E. read.open (grades.txt);

What is the output of the following C++ code?

```
int i = 1, sum = 0;


while (i <= 5) {
   if (i % 2 == 0)
      sum += i;
   i++;
}


cout << "Sum = " << sum << endl;
```

جدول التتبع:

i	i % 2 == 0?	sum
1	No	0
2	Yes	2
3	No	2
4	Yes	6

5	No	6
6	>5 → stop	

✅ **Output:**

Sum = 6

What is the output of the following C++ code?

```
int i = 1, count = 0;
while (i <= 3) {
  int j = 1;
  do {
    if ((i + j) % 2 == 0)
      count++;
    j++;
  } while (j <= 2);
  i++;
}
cout << "Count = " << count << endl;
```

جدول التتبع:

i	j	i+j	(i+j)%2==0?	count
1	1	2	Yes	1
1	2	3	No	1
2	1	3	No	1
2	2	4	Yes	2

3	1	4	Yes	3
3	2	5	No	3

✅ **Output:**

Count = 3

What is the output of the following C++ code?

```
int x = 0;
for (int i = 1; i <= 4; i++) {
   switch (i) {
      case 1: x += 2; break;
      case 3: x += 3; break;
      default: x += 1;
   }
}
cout << "x = " << x << endl;
```

جدول التتبع:

i	case	x (before)	x (after)
1	case 1	0	2
2	default	2	3
3	case 3	3	6
4	default	6	7

✅ **Output:** x = 7

ExProg1: **Write a program that reads a set of integers and then finds and prints the sum of the even and odd integers.**

```
Sample Run:

Please enter 20 integers
The numbers you entered are:
11      22      12      33      52      45      75      88
66      33
12      22      42      25      11      25      33      62
45      22
11 22 12 33 52 45 75 88 66 33 12 22 42 25 11 25 33 62 45 22
Even sum: 400
Odd sum: 336
```

Solution:

```
#include <iostream>
#include <iomanip>

using namespace std;

const int N = 20;

int main ()
{
          //Declare variables
     int counter;    //loop control variable
     int number;     //variable to store the new number

          //Declare and initialize (remaining) variables
     int sumOdds = 0;   //variable to store the sum of odd
integers
     int sumEvens = 0;  //variable to store the sum of even
integers

     cout << "Please enter " << N << " integers" << endl;

     cout << "The numbers you entered are: " << endl;

     for (counter = 1; counter <= N; counter++)
```

```
     {
          cin >> number;                          //read number
          cout << number << " ";                  // output number

          if (number % 2 == 0)
               sumEvens = sumEvens + number;      //update even
sum
          else
               sumOdds = sumOdds + number;        //update odd sum
    }

    cout << endl;

    cout << "Even sum: " << sumEvens << endl;
    cout << "Odd sum: " << sumOdds << endl;

     cin.ignore();
     cin.get();
     return 0;
}
```

ExProg2: **Write a program that uses while loops to perform the following steps:**

a) **Prompt the user to input two integers: firstNum and secondNum (firstNum must be less than secondNum).**
b) **Output all odd numbers between firstNum and secondNum.**
c) **Output the sum of all even numbers between firstNum and secondNum.**
d) **Output the numbers and their squares between 1 and 10.**
e) **Output the sum of the square of the odd numbers between firstNum and secondNum.**
f) **Output all uppercase letters.**

```
Sample Run:
Enter two numbers.
First number must be less than the second number you enter
Enter numbers: 9
10

Odd integers between 9 and 10 are:
```

```
9
Sum of even integers between 9 and 10 = 10
Number    Square of Number
   1                 1
   2                 4
   3                 9
   4                16
   5                25
   6                36
   7                49
   8                64
   9                81
  10               100

Sum of the squares of odd integers between 9 and 10 = 81
Upper case letters are: A B C D E F G H I J K L M N O P Q R S T U
V W X Y Z
```

Solution:

```
#include <iostream>
#include <iomanip>

using namespace std;

int main()
{
      int firstNum, secondNum;
      int sumEven = 0;
      int sumSquareOdd = 0;

      char chCounter;

      int counter;

            //Part a
      cout << "Enter two numbers." << endl;
      cout << "First number must be less than "
            << "the second number you enter" << endl;
      cout << "Enter numbers: " << flush;
      cin >> firstNum >> secondNum;
      cout << endl;
```

```
	//Part b
	if (firstNum % 2 == 0)
		counter = firstNum + 1;
	else
		counter = firstNum;

	cout << "Odd integers between " << firstNum << " and "
		 << secondNum << " are: " << endl;

	while (counter <= secondNum)
	{
		cout << counter << " ";
		counter = counter + 2;
	}

	cout << endl;

		//Part c
	if (firstNum % 2 == 0)
		counter = firstNum;
	else
		counter = firstNum + 1;

	while (counter <= secondNum)
	{
		sumEven = sumEven + counter;
		counter = counter + 2;
	}

	cout << "Sum of even integers between " << firstNum << " and
"
		 << secondNum << " = " << sumEven << endl;

		//Part d
	cout << "Number    Square of Number" << endl;
	counter = 1;
	while (counter <= 10)
	{
		cout << setw(4) << counter << setw(18)
		  << counter * counter << endl;
		counter++;
	}

	cout << endl;
```

```
            //Part e
      if (firstNum % 2 == 0)
            counter = firstNum + 1;
      else
            counter = firstNum;

      while (counter <= secondNum)
      {
            sumSquareOdd = sumSquareOdd + counter * counter;
            counter = counter + 2;
      }

      cout << "Sum of the squares of odd integers between "
          << firstNum << " and " << secondNum << " = "
          << sumSquareOdd << endl;

            //Part f
      cout << "Upper case letters are: ";

      chCounter = 'A';
      while (chCounter <= 'Z')
      {
            cout << chCounter << " ";
            chCounter++;
      }
      cout << endl;



      return 0;
}
```

ExProg3: **The population of a town A is less than the population of town B. However, the population of town A is growing faster than the population of town B. Write a program that prompts the user to enter the population and growth rate of each town. The program outputs after how many years the population of town A will be greater than or equal to the population of town B and the populations of both the towns at that time. (A sample input is: Population of town A = 5000, growth rate of town A = 4%, population of town B = 8000, and growth rate of town B = 2%.)**

Sample Run:

```
Enter the current population of town A: 200

Enter the current population of town B: 400

Enter the growth rate of town A: 15

Enter the growth rate of town B: 10

After 16 year(s) the population of town A will be greater than or
equal to the population of town B.
After 16 population of town A is 1841
After 16 population of town B is 1824
```

Solution:

```
#include <iostream>
#include <iomanip>

using namespace std;

int main()
{
```

```
    int townAPop;
    int townBPop;
    double growthRateTownA;
    double growthRateTownB;
    int numOfYears = 0;

    cout << "Enter the current population of town A: ";
    cin >> townAPop;
    cout << endl;

    cout << "Enter the current population of town B: ";
    cin >> townBPop;
    cout << endl;

    cout << "Enter the growth rate of town A: ";
    cin >> growthRateTownA;
    cout << endl;

    cout << "Enter the growth rate of town B: ";
    cin >> growthRateTownB;
    cout << endl;

    while (townAPop < townBPop)
    {
        townAPop = static_cast<int>(townAPop * (1 +
growthRateTownA / 100.0));
        townBPop = static_cast<int>(townBPop * (1 +
growthRateTownB / 100.0));
        numOfYears++;
    }

    cout << "After " << numOfYears << " year(s) the population of
town A "
         << "will be greater than or equal to the population of
town B." << endl;
    cout << "After " << numOfYears << " population of town A is "
         << townAPop << endl;
    cout << "After " << numOfYears << " population of town B is "
         << townBPop << endl;



     cin.ignore();
     cin.get();
     return 0;
```

```
}
```

```
/* print digits of  a positive number in reverse order?
        Ex:1234 print 4321
        */
#include<iostream>
#include<cstdlib>
using namespace std;
void main()
{
        int number;

        cout<<"please enter integer number:"<<endl;
        cin>>number;

        while(number > 0)
        {
                cout<<number%10;
                number/=10;
        }//end for R

        cout<<endl;
}//end main
```

```
//check the number it is prime or not?
#include<iostream>
#include<cstdlib>
using namespace std;
void main()
{
	bool prime=true;
	int number;
	cout<<"please enter integer number:"<<endl;
	cin>>number;
	for(int R=2;R<=abs(number)/2;R++)
	{
		if(number%R==0)
		{
			prime=false;
			break;
		}//end if
	}//end for R

	if(prime)
		cout<<"number "<<number <<" is prime number"<<endl;
	else
		cout<<"number "<<number <<" is not prime number"<<endl;
}//end main
```

📌**ما هو الـ Perfect Number؟**

الـ) **Perfect Number**بالعربي :**العدد الكامل** أو **العدد التام** (هو:

عدد صحيح موجب يساوي مجموع جميع قواسمه الموجبة (ما عدا نفسه).

✅**تعريف مبسط:**

لو جمعت كل القواسم اللي بتقسم الرقم بدون باقي **بدون ما تحسب الرقم نفسه**، وكان الناتج يساوي الرقم نفسه ← فهو عدد كامل.(Perfect Number)

🧮**أمثلة على الأعداد الكاملة:**

الرقم	قواسمه (بدون نفسه)	المجموع	هل هو كامل؟
6	1 + 2 + 3	6	✅نعم
28	1 + 2 + 4 + 7 + 14	28	✅نعم
12	1 + 2 + 3 + 4 + 6	16	❌لا
496	1 + 2 + 4 + ... + 248	496	✅نعم

```
/* A number is a perfect number if is equal to sum of its proper divisors,
that is, sum of its positive divisors excluding the number itself
check the number it is perfect or not?
*/
```

```
#include<iostream>
#include<cstdlib>
using namespace std;
void main()
{
	int sum=0;
	int number;

	cout<<"please enter integer number:"<<endl;
	cin>>number;

	for(int R=1;R<=abs(number)/2;R++)
	{
		if(number%R==0)
		{
			cout<<R<<" ";
			sum+=R;

		}

	}//end for R
```

```
        cout<<"summation="<<sum<<endl;
        if(sum==number)
                cout<<"number "<<number <<" is perfect number"<<endl;
        else
                cout<<"number "<<number <<" is not perfect number"<<endl;
}//end main
```

Write a program that asks the user to enter positive integers one by one. The program should continue asking for numbers until the user enters a negative number. For each positive number entered, the program should check if it is even or odd and display a message accordingly. When the user enters a negative number, the program should stop and display how many even and how many odd numbers were entered.

```
#include <iostream>
using namespace std;

int main() {
  int number;
  int evenCount = 0;
  int oddCount = 0;

  cout << "Enter positive integers (enter a negative number to stop):" << endl;

  while (true) {
    cin >> number;

    if (number < 0) {
      // Stop the loop if negative number entered
      break;
    }

    // Selection structure: check if number is even or odd
    if (number % 2 == 0) {
```

```
        cout << number << " is even." << endl;
        evenCount++;
    } else {
        cout << number << " is odd." << endl;
        oddCount++;
    }
  }

  cout << "You entered " << evenCount << " even numbers and " << oddCount << " odd numbers." << endl;

  return 0;
}
```

Write a C++ program to count number of digits in a positive integer

Example input : 125

Output: 3

Any program used to partition the integer into digits has to use / and % operations.

Note that 125%10 is 5 (least significant digit)

125/10 is 12

Since the integer may be any number of digits, while loop will be more proper

```cpp
#include <iostream>

using namespace std;

int main()
{
    //number represents input value whose digits will be count
    //digit represents number of digits in a number with initial value 1 since a smallest value contains 1 digit
    int number,digit=1;
    cout<<"Input the number"<<endl;
    cin>>number;
    while(number>9)   //loop is repeated as long as number has more than 1 digit
    {
        number/=10;     //will remove least significant digit
        digit++;       //will count the removed digit
    }

   cout<<"Number of digits is "<<digit<<endl;

   return 0;
}
```

Write a C++ program to find the following sum

Sum=11+22+33+44+55+.....+nn

Here nested loop is needed: loop to find the power nn and to find the sum another loop is needed.

To find **11or 22 or 33 or 44or 55....**

The following code is needed

Variable p will be used to find the value of power ii (where i =1 or 2 or 3...)

p=1;

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

p=p*I;

```
int main()
{
    //n is the value of last term
    //p is the value of power or nth term
    int n,p,sum=0;
    cout<<"Input value of n which is last term ";
    cin>>n;
    for(int i=1;i<=n;i++)   //loop to find sum
    {
        p=1;
        for(int x=1;x<=i;x++)   //loop to find power
            p=p*i;
        sum=sum+p;
    }
    cout<<"The sum is "<<sum<<endl;

   return 0;
}
```

Write a C++ program to

1. Input 20 numbers and find their minimum.
2. Input 20 numbers and count how many times maximum value appeared.
3. Input 20 numbers and print only even ones.
4. Find sum of 20 numbers input by the user.
5. Find $\sum_{i=1}^{20} i$
6. Input an integer and print it in reverse order.
7. Input an integer and find sum of its digits.
8. Input 2 integers x,y and find x^y.
9. Find the following sum

$$Sum=\frac{1}{1!}+\frac{2}{2!}+\frac{3}{3!}+\frac{4}{4!}+\frac{5}{5!}+\dots\dots+\frac{n}{n!}$$

✅ **5. Sum from 1 to 20:**

(من 1 لـ 20 loop المجموع باستخدام الـ)

```
#include <iostream>

using namespace std;


int main() {

  int sum = 0;

  for (int i = 1; i <= 20; i++) {

     sum += i;

  }


  cout << "Sum from 1 to 20 = " << sum << endl;

  return 0;
```

```
}
```

✅ **6. Reverse integer:**

```
#include <iostream>
using namespace std;

int main() {
   int num, reversed = 0;
   cout << "Enter a number: ";
   cin >> num;

   while (num != 0) {
      int digit = num % 10;
      reversed = reversed * 10 + digit;
      num /= 10;
   }

   cout << "Reversed number: " << reversed << endl;
   return 0;
}
```

✅ **7. Sum of digits:**

```
#include <iostream>
using namespace std;
```

```
int main() {
   int num, sum = 0;
   cout << "Enter a number: ";
   cin >> num;

   while (num != 0) {
      sum += num % 10;
      num /= 10;
   }

   cout << "Sum of digits: " << sum << endl;
   return 0;
}
```

✅ **8. Find x^y:**

```
#include <iostream>
#include <cmath>
using namespace std;

int main() {
   int x, y;
   cout << "Enter base x: ";
   cin >> x;
   cout << "Enter power y: ";
   cin >> y;
```

```
    int result = pow(x, y);
    cout << x << "^" << y << " = " << result << endl;
    return 0;
}
```

✅ **9. حساب المجموع التالي:**

```
#include <iostream>
using namespace std;

// دالة لحساب المضروب (factorial)
int factorial(int n) {
    int fact = 1;
    for (int i = 1; i <= n; i++)
        fact *= i;
    return fact;
}

int main() {
    int n;
    double sum = 0;

    cout << "Enter n: ";
    cin >> n;
```

```
    for (int i = 1; i <= n; i++) {
        sum += (double)i / factorial(i);
    }

    cout << "Sum = " << sum << endl;
    return 0;
}
```
