The Programming Club

Intro to C++

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FPS | 2023

Overview

01 Header files & basic syntax
- Basic header files in C++
- The universal header file

02 Variables
- Types of variables in C++
- Operations on Variables

03 Input and Output in C++
- The input-output format in C++
- Few tricks and tips

04 Basic Operations on Variables
- Arithmetic & Logical operations.
- Mathematical Operations

Header Files

What are header files?

These are those files that store predefined functions. We include them using the keyword '#include'.

What is the universal header file?

Instead of using multiple header files in our code, while doing competitive programming we use a single header file - "bits/stdc++.h"

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Variables

- int
- long long int
- short int
- bool
- char
- string
- float
- double

Sizes of Variables

Variable	Bits	Range
char	8	0 - 255
int	32	-2^31 to 2^31 - 1
long long int	64	-2^63 to 2^63 - 1
float	32	-
double	64	-

INPUT & OUTPUT

INPUT

Keyword
"cin"

OUTPUT

Keyword
"cout"

APPLICATION

"\n": Next line
endl: Next line
"\t": Leaves a tab

OPERATORS

ARITHMETIC
Addition, Subtraction, Multiplication, Division and Modulo

LOGICAL
Equal, Greater, Less, Greater Than or Equal, Not Equal, Etc.

BITWISE
And, Or, Xor, Not. Left-Shift, Right-Shift

QUESTION

WHAT IS THE OUTPUT OF THE FOLLOWING CODE?

```
int x = 100;
int y = 3;
int z = x / y;
cout << z;
```

QUESTION

WHAT IS THE OUTPUT OF THE FOLLOWING CODE?

```
int x = 'a';
cout << x << endl;
```

LIST OF OPERATORS

Type	Operators	
Arithmetic	Addition (+) Subtraction(-) Multiplication(*) Division(/)	Increment(++) Decrement(--) Modulo(%)
Relational	Less Than (<) Less Than or Equal (<=) Greater Than (>) Greater Than or Equal (>=)	Equal (==) Not Equal (!=) And (&&) Or(||) Not (!)
Bitwise	And (&) Or(|) Xor(^)	Not (!) LeftShift (<<) RightShift (>>)

QUESTION

WHICH OF THE FOLLOWING CODE OUTPUTS 1?

A)
```
bool b = (1 == 1) && (1 != 1);
cout << b;
```

C)
```
bool b = !(1 == 1);
cout << b;
```

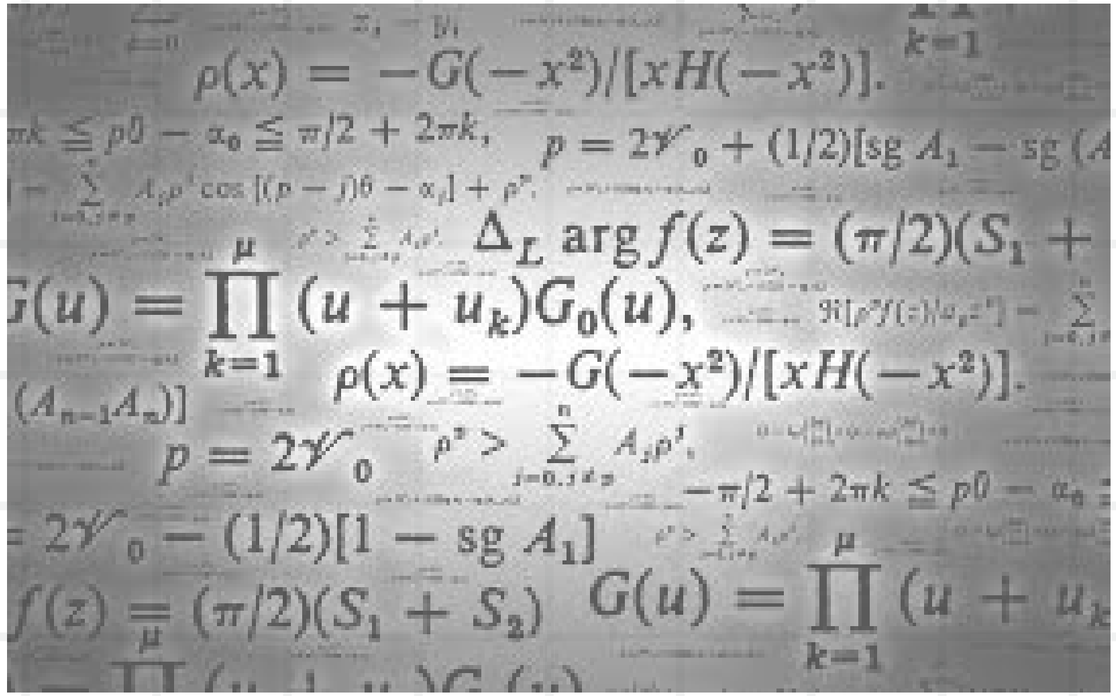
B)
```
bool b = (1 != 1) || (1 == 1);
cout << b;
```

D)
```
bool b = false;
cout << b;
```

MATHS

Few important mathematical functions:

- log(), log2()
- sqrt(), pow()
- floor(), ceil()
- min(), max()
- abs()



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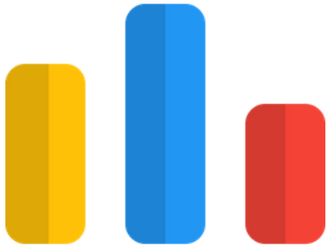

Codeforces

Solving the WaterMelon Problem

CF Problem ID

4A - Watermelon

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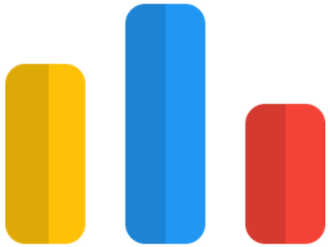

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