```cpp

/*
Hello World!

Welcome to the source code of this program coded by Anusheel Soni of Class IX-C
for the project on Computer Science!

This program is fully written by me, 100% of it.

I convey this with a trust-promise that I have sincerely typed every single word in
this program all by myself and have not taken any help from any external sources.
Happy Staying! :) :D
*/

#include <iostream>
#include <cmath>
#include <string>
#include <windows.h>

int main()
{
    std::string name1;
    std::cout << "\n\n<----- ----------^---------- ----------^---------- ----------^---------- -----> " <<
std::endl;
    std::cout << "This program would love to know your name! :D :) :D :)" <<std::endl;
    std::getline (std::cin, name1);
    system("cls");
    std::cout << "\n\n<----- ----------^---------- ----------^---------- ----------^---------- -----> " <<
std::endl;
    std::cout << "\n" << name1 <<", What a lovely name!\n" << std::endl;
    std::cout << "Welcome to my project Mr/Ms " << name1 << "!\nThis is a simple input-output stream,
string, cmath and windows.h library-headed program based on arithmetical operations on c++.\n"<<std::endl;
    std::cout << "\n\n<----- ----------^---------- ----------^---------- ----------^---------- -----> " <<
std::endl;

LIST:
    system("pause");
    system("cls");
    float num1, num2;
    std::cout << "\n\n<----- ----------^---------- ----------^---------- ----------^---------- -----> " <<
std::endl;

    std::cout << "\nPlease enter a number: ";
    std::cin >> num1;

    std::cout << "Enter another number: ";
    std::cin >> num2;

    system("cls");

    std::cout << "\n\n<----- ----------^---------- ----------^---------- ----------^---------- -----> " <<
std::endl;
    std::cout << "\nGreat! Now the program has your numbers! What do you want the program to with these
numbers? :" << std::endl;
    std::cout << "\n 1. Addition, subtraction, multiplication, division." << std::endl;
    std::cout << " 2. Find Square root of first and second number." << std::endl;
    std::cout << " 3. Find Cube root of first and second number."  << std::endl;
    std::cout << " 4. Compare the first and the second number." << std::endl;
    std::cout << " 5. Show Time Table of the first number from 1 to 10." << std::endl;
    std::cout << " 6. Show Time Table of the second number from 1 to 10." << std::endl;
    std::cout << " 7. Find (1st no.)% of (2nd no.) and (2nd no.)% of (1st no.)." << std::endl;
    std::cout << " 8. Show Root table of the first number from 1 to 10." << std::endl;
    std::cout << " 9. Show Root table of the second number from 1 to 10." << std::endl;
    std::cout << "10. Do Even-Odd Detection." << std::endl;
    std::cout << "11. Factorization of both numbers." << std::endl;
    std::cout << "12. Find the Pythagorean Triplet of these numbers in cm." << std::endl;
```

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60      std::cout << "\n\n<----- ----------^---------- ----------^---------- ----------^---------- ----->" << std::endl;
61      std::cout << "\nThat's all this program can do! Enter a number to choose your choice from the list of functions given." << std::endl;
62      int x;
63      std::cin >> x;
64      system("cls");
65      switch (x)
66      {
67      case 1:
68  OPP:
69          std::cout << "Enter an operator to add, subtract, multiply or divide (+, -, *, /)";
70          char o;
71          std::cin >> o;
72          switch (o)
73          {
74          case '+':
75              std::cout << num1 << " + " << num2 << " = " << num1+num2;
76              break;
77          case '-':
78              std::cout << num1 << " - " << num2 << " = " << num1-num2;
79              break;
80          case '*':
81              std::cout << num1 << " * " << num2 << " = " << num1*num2;
82              break;
83          case '/':
84              std::cout << num1 << " / " << num2 << " = " << num1/num2;
85              break;
86          default:
87              // if the operator typed is wrong (+, -, *, /) or any other bug crashes
88              std::cout << "\nError! something went wrong, retry.\n" << std::endl;
89              system("pause");
90              system("cls");
91              goto OPP;
92              break;
93          }
94          break;
95
96      case 2:
97          std::cout << "Square root of " << num1 << " = " << sqrt(num1) << std::endl;
98          std::cout << "Square root of " << num2 << " = " << sqrt(num2) << std::endl;
99          break;
100
101     case 3:
102         std::cout << "Cube root of " << num1 << " = " << cbrt(num1) << std::endl;
103         std::cout << "Cube root of " << num2 << " = " << cbrt(num2) << std::endl;
104         break;
105
106     case 4:
107         if(num1<num2)
108         {
109             std::cout << num1 << " is smaller than " << num2 << " which obviously means " << num2 << " is greater than " << num1 << std::endl;
110         }
111         if(num2<num1)
112         {
113             std::cout << num2 << " is smaller than " << num1 << " which obviously means " << num1 << " is greater than " << num2 << std::endl;
114         }
115         if(num1==num2)
116         {
117             std::cout << "Both the numbers are equal, i.e., " << num1 << " = " << num2 << "\n" << std::endl;
118         }
119         break;
120
```

```
121     case 5:
122         float t;
123         t = 1;
124         while(t <= 10)
125         {
126             std::cout << num1 << " * " << t << " = " << num1*t << std::endl;
127             t++;
128         }
129         break;
130 
131     case 6:
132         float tt;
133         tt = 1;
134         while(tt <= 10)
135         {
136             std::cout << num2 << " * " << tt << " = " << num2*tt << std::endl;
137             tt++;
138         }
139         break;
140 
141     case 7:
142         std::cout << num1 << "% of " << num2 << " = " << (num1/100)*num2 << std::endl;
143         std::cout << num2 << "% of " << num1 << " = " << (num2/100)*num1 << std::endl;
144         std::cout << "(Turns out to be the same, know why? As per the percentage rule, a% of x = x% of a.)"
<<std::endl;
145         break;
146 
147     case 8:
148         float ro;
149         ro = 1;
150         while(ro <= 10)
151         {
152             std::cout << num1 << " ^ " << ro << " = " << pow(num1, ro) << std::endl;
153             ro++;
154         }
155         break;
156 
157     case 9:
158         float rt;
159         rt = 1;
160         while(rt <= 10)
161         {
162             std::cout << num2 << " ^ " << rt << " = " << pow(num2, rt) << std::endl;
163             rt++;
164         }
165         break;
166 
167     case 10:
168         float d;
169         float di;
170         d = fmod(num1, 2);
171         if(d == 0)
172         {
173             std::cout << num1 << " is an even number" << std::endl;
174         }
175         else
176         {
177             std::cout << num1 << " is an odd number" << std::endl;
178         }
179 
180         di = fmod(num2, 2);
181         if(di == 0)
182         {
183             std::cout << num2 << " is an even number" << std::endl;
184         }
185         else
```

```
        {
            std::cout << num2 << " is an odd number" << std::endl;
        }
        break;

    case 11:
        int dc;
        float d1, d2;
        std::cout << "\n<----- ----------^---------- ----------^---------- ----------^---------- ----->\n"
<< std::endl;
        std::cout << "Factors of " << num1 << " are: " << std::endl;
        for (dc=1; dc<=num1; dc++)
        {
            d1 = fmod(num1, dc);
            if (d1 == 0)
                std::cout << dc << std::endl;
        }
        std::cout << "\n<----- ----------^---------- ----------^---------- ----------^---------- ----->\n"
<< std::endl;
        std::cout << "Factors of " << num2 << " are: " << std::endl;
        for (dc=1; dc<=num2; dc++)
        {
            d2 = fmod(num2, dc);
            if (d2 == 0)
                std::cout << dc << std::endl;
        }
        std::cout << "\n<----- ----------^---------- ----------^---------- ----------^---------- ----->\n"
<< std::endl;
        break;

    case 12:
        float nm1, nm2, py, pt;
        nm1 = (num1 * num1);
        nm2 = (num2 * num2);
        py = nm1 + nm2;
        pt = pow(py, 0.5);
        std::cout << "The Pythagorean Triplet of " << num1 <<" and " << num2 << " is: " << pt << std::endl;
        break;

    default:
        // if the program meets bug crashes
        std::cout << "\nError! something went wrong, retry.\n" << std::endl;
        goto LIST;
        break;

    }

LAST:
    std::cout << "" << std::endl;
    system("pause");
    system("cls");
    std::cout << "\nWant to repeat this program?(Y/N)"<< std::endl;
    char r;
    std::cin >> r;
    system("cls");
    switch (r)
    {
    case 'Y':
        goto LIST;
        break;

    case 'N':
        break;

    default:
        //If the input is not in Y/N
```

```
249          std::cout << "Please Enter either Y or N only." << std::endl;
250          goto LAST;
251          break;
252      }
253
254      std::cout << "\n\n**^-^***^_^***^-^***^_^***^-^***^_^***^-^***^_^***^-^***^_^***^-^***^_^***^-^**" <<
std::endl;
255      std::cout << "\n\nThank You very much Mr/Ms " << name1 << " for using my C++ program. This program was
coded by Anusheel Soni of Class IX-C for the project on Computer Science. This program is fully written by me,
100% of it. I convey this with a trust-promise that I have sincerely typed every single word in this program all
by myself and have not taken any help from any external sources. Goodbye! ;D" << std::endl;
256      std::cout << "\n\n**^-^***^_^***^-^***^_^***^-^***^_^***^-^***^_^***^-^***^_^***^-^***^_^***^-^**" <<
std::endl;
257      std::cout << "\n\nCreated By : Anusheel Soni\nClass : IX - C\nRoll No. : 9\nSubmitted As : Computer
Science Project" << std::endl;
258      std::cout << "\n\n**^-^***^_^***^-^***^_^***^-^***^_^***^-^***^_^***^-^***^_^***^-^***^_^***^-^**" <<
std::endl;
259      system ("pause");
260      return 0;
261      //returns integer value of int main() to 0. This is required to recheck if the program functioned
correctly and end the program.
262  }
263
```