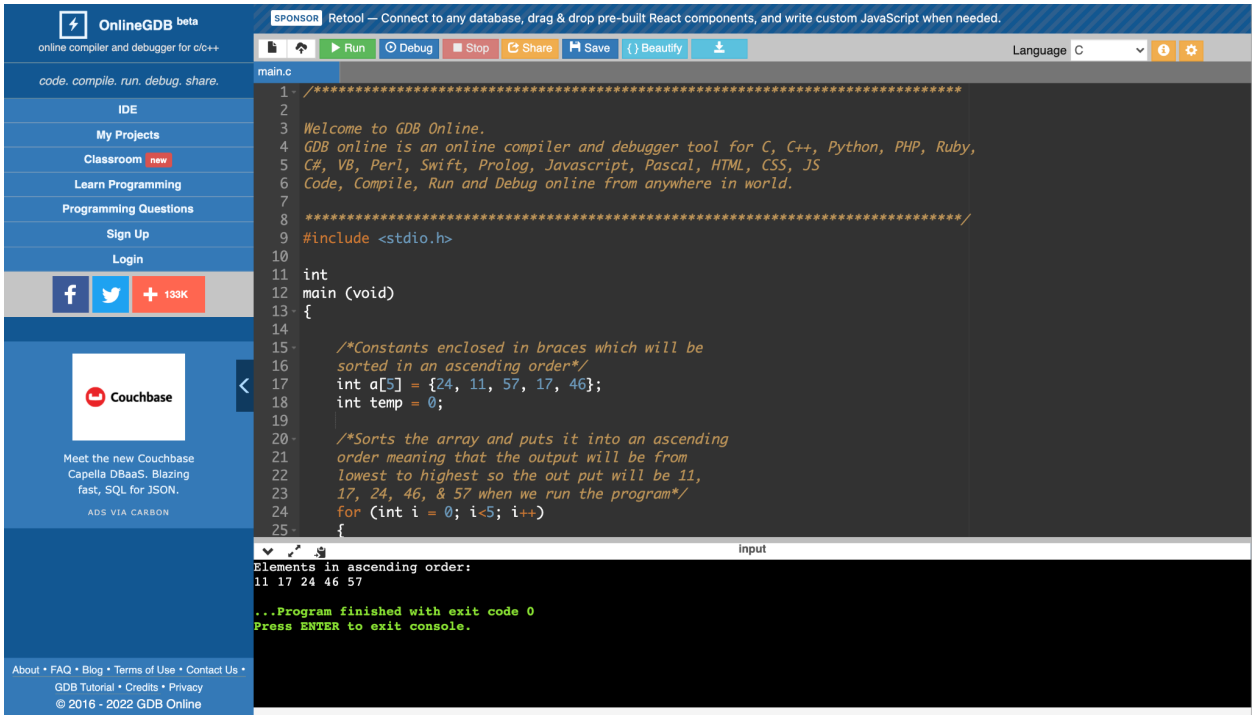
Algorithms and Introduction to C

Hamza Ejaz Malik
501112545
Jan 30, 2022

Problem 1:



Pseudocode for problem 1:

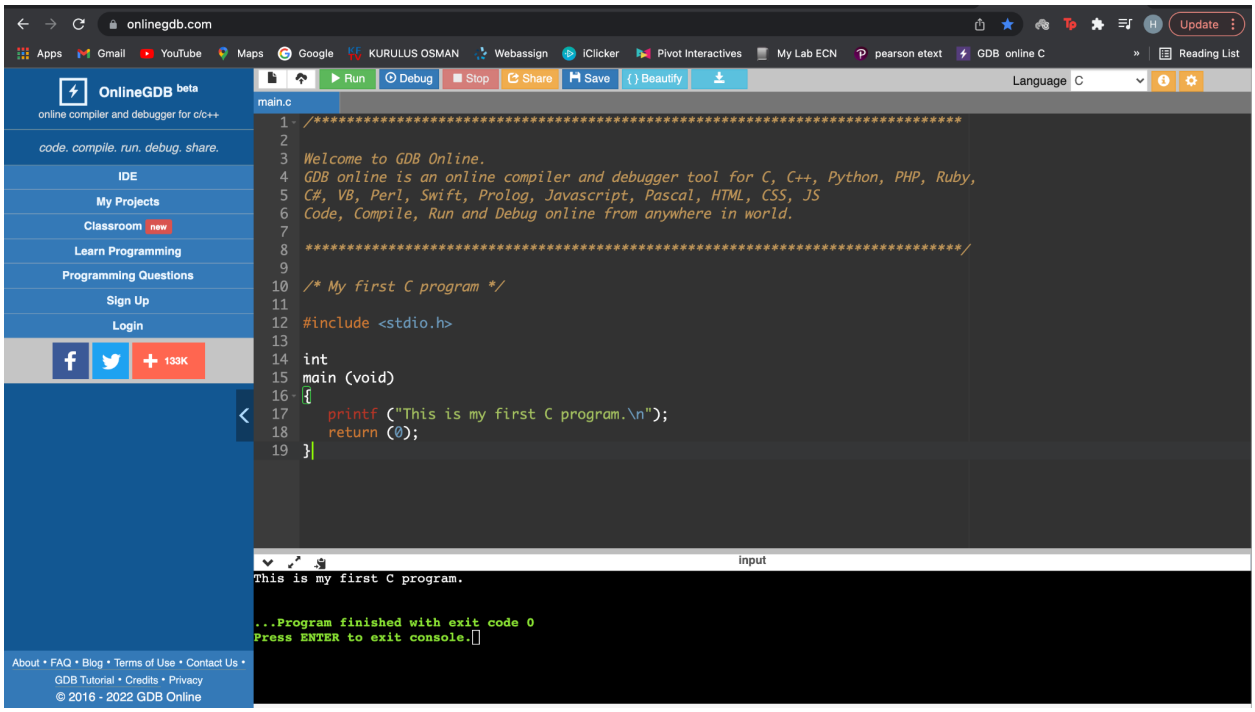
1. Arrays are declared and initialized.
2. Array elements are selected by looping through the array.
3. Comparing the outer loop element with the remaining elements of the array will be done in the inner loop.
4. Elements whose values are smaller than the selected element should be swapped.
5. This should be done until all elements are in ascending order.
6. Run the code
7. Stop

Code for problem 1:

```
#include <stdio.h>

int
main (void)
{

   /*Constants enclosed in braces which will be
   sorted in an ascending order*/
   int a[5] = {24, 11, 57, 17, 46};
   int temp = 0;

   /*Sorts the array and puts it into an ascending
   order meaning that the output will be from
   lowest to highest so the output will be 11,
   17, 24, 46, & 57 when we run the program*/
   for (int i = 0; i<5; i++)
   {
      for (int j = i+1 ; j<5; j++)
      {
         if(a[i] > a[j])
         {
            temp = a[i];
            a[i] = a[j];
            a[j] = temp;
         }
      }
   }

   /* Displays "Elements in ascending order"
   as well as the output when we run the
   program*/
   printf("Elements in ascending order: \n");
   for (int i = 0; i <5; i++)
```

```
    {
        printf("%d ", a[i]);
    }

    return (0);
}
```

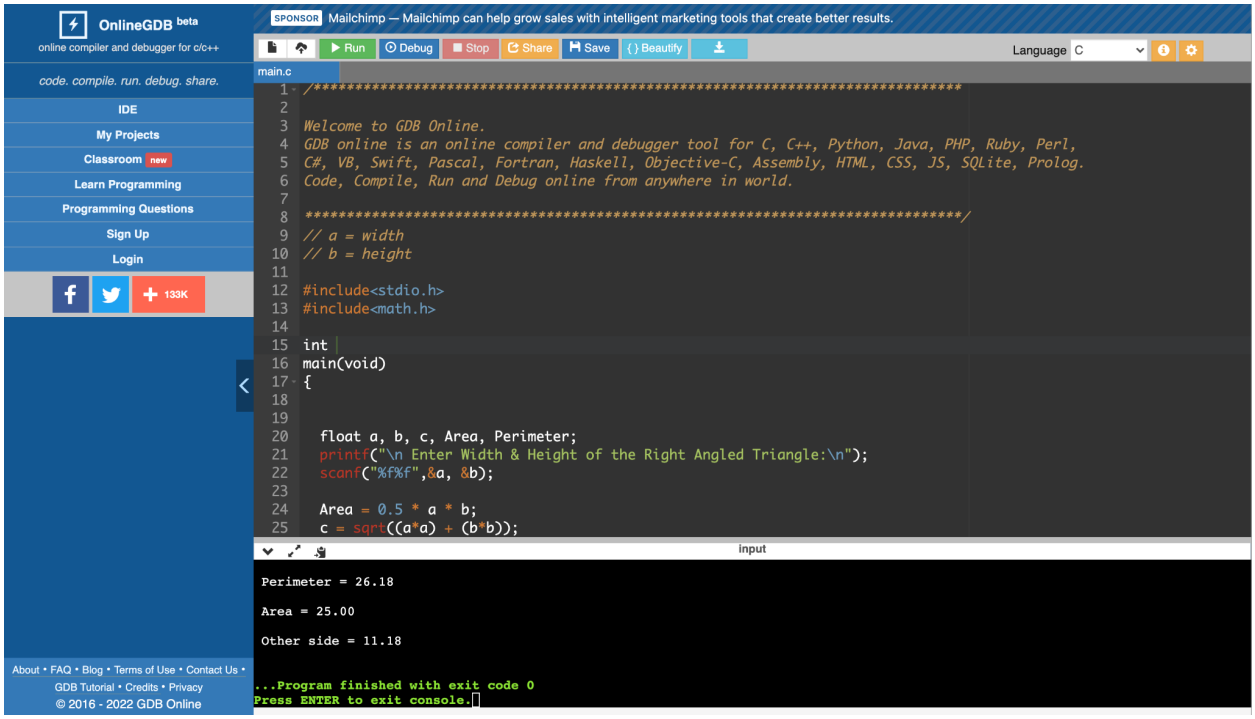
Problem 2:

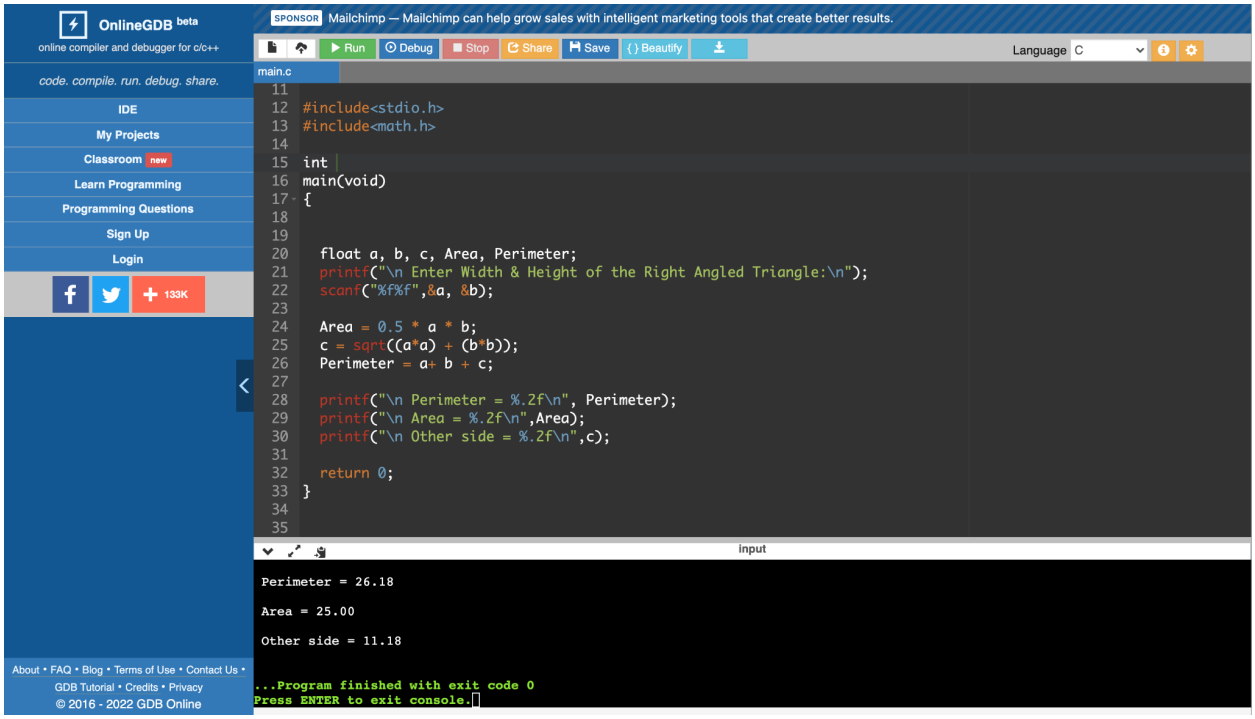


Code for problem 2:

```
/* My first C program */

#include <stdio.h>

int
main (void)
{
  printf ("This is my first C program.\n");
  return (0);
}
```

Problem 3:


OnlineGDB beta
online compiler and debugger for c/c++
code. compile. run. debug. share.
IDE
My Projects
Classroom new
Learn Programming
Programming Questions
Sign Up
Login
133K
SPONSOR Mailchimp — Mailchimp can help grow sales with intelligent marketing tools that create better results.
Run
Debug
Stop
Share
Save
{ } Beautify
Language C
main.c
/***
Welcome to GDB Online.
GDB online is an online compiler and debugger tool for C, C++, Python, Java, PHP, Ruby, Perl,
C#, VB, Swift, Pascal, Fortran, Haskell, Objective-C, Assembly, HTML, CSS, JS, SQLite, Prolog.
Code, Compile, Run and Debug online from anywhere in world.
***/
// a = width
// b = height
#include<stdio.h>
#include<math.h>
int
main(void)
{
float a, b, c, Area, Perimeter;
printf("\n Enter Width & Height of the Right Angled Triangle:\n");
scanf("%f%f",&a, &b);
Area = 0.5 * a * b;
c = sqrt((a*a) + (b*b));
input
Perimeter = 26.18
Area = 25.00
Other side = 11.18
...Program finished with exit code 0
Press ENTER to exit console.
About • FAQ • Blog • Terms of Use • Contact Us •
GDB Tutorial • Credits • Privacy
© 2016 - 2022 GDB Online


OnlineGDB beta
online compiler and debugger for c/c++
code. compile. run. debug. share.
IDE
My Projects
Classroom new
Learn Programming
Programming Questions
Sign Up
Login
133K
SPONSOR Mailchimp — Mailchimp can help grow sales with intelligent marketing tools that create better results.
Run
Debug
Stop
Share
Save
{ } Beautify
Language C
main.c
#include<stdio.h>
#include<math.h>
int
main(void)
{
float a, b, c, Area, Perimeter;
printf("\n Enter Width & Height of the Right Angled Triangle:\n");
scanf("%f%f",&a, &b);
Area = 0.5 * a * b;
c = sqrt((a*a) + (b*b));
Perimeter = a+ b + c;
printf("\n Perimeter = %.2f\n", Perimeter);
printf("\n Area = %.2f\n",Area);
printf("\n Other side = %.2f\n",c);
return 0;
}
input
Perimeter = 26.18
Area = 25.00
Other side = 11.18
...Program finished with exit code 0
Press ENTER to exit console.
About • FAQ • Blog • Terms of Use • Contact Us •
GDB Tutorial • Credits • Privacy
© 2016 - 2022 GDB Online

Pseudocode for problem 3:

a = width

b = height

1. Read other side, a, b, and c
2. Calculate the area of a triangle Area = 0.5 * a * b
3. Calculate the other side, c: c = sqrt((a * a) + (b * b))
4. Calculate the perimeter = a + b + c
5. Display the perimeter of the right-angled triangle
6. Display the area of the right-angled triangle
7. Display the measurement for c
8. Run the code
9. Enter a value for the width and height of the right-angled triangle
10. Stop

Code for problem 3:

```
// a = width
// b = height

#include<stdio.h>
#include<math.h>

int
main(void)
{

  float a, b, c, Area, Perimeter;
  printf("\n Enter Width & Height of the Right Angled Triangle:\n");
  scanf("%f%f",&a, &b);

  Area = 0.5 * a * b;
  c = sqrt((a*a) + (b*b));
  Perimeter = a+ b + c;

  printf("\n Perimeter = %.2f\n", Perimeter);
  printf("\n Area = %.2f\n",Area);
  printf("\n Other side = %.2f\n",c);

  return (0);
}
```

END OF LAB