

C++ Variables and Data Types

Assignment Solutions

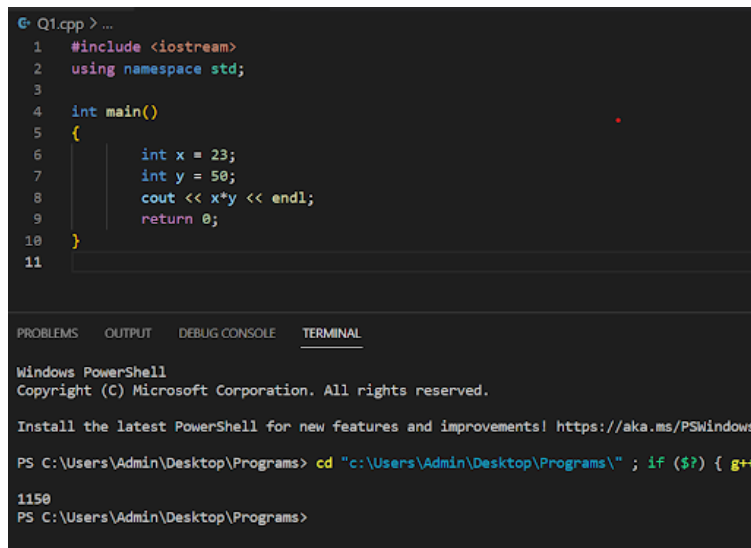


Q1 – Take 2 integer values in two variables x and y and print their product.

```
#include <iostream>

using namespace std;

int main()
{
    int x = 23;
    int y = 50;
    cout << x*y << endl;
    return 0;
}
```



The screenshot shows a C++ IDE with a file named Q1.cpp. The code is as follows:

```
1  #include <iostream>
2  using namespace std;
3
4  int main()
5  {
6      int x = 23;
7      int y = 50;
8      cout << x*y << endl;
9      return 0;
10 }
11
```

Below the code editor, there is a terminal window. It shows the command prompt output for running the program:

```
Windows PowerShell
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Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Users\Admin\Desktop\Programs> cd "c:\Users\Admin\Desktop\Programs\" ; if ($?) { g++
1150
PS C:\Users\Admin\Desktop\Programs>
```

Q2 – Print the ASCII value of character 'U'.

```
#include <iostream>

using namespace std;

int main()
{
    cout << "ASCII value of u is " << (int)'U' << endl;
    return 0;
}
```

```
Q2.cpp > main()
1  #include <iostream>
2  using namespace std;
3
4  int main()
5  {
6      cout << "ASCII value of u is " << (int)'U' << endl;
7      return 0;
8  }
9

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

PS C:\Users\Admin\Desktop\Programs> cd Lessonplan3
PS C:\Users\Admin\Desktop\Programs\Lessonplan3> cd "c:\Users\Admin\Desktop\Programs\" ; if ($?) { g++
$?) { .\Q2 }
ASCII value of u is 85
PS C:\Users\Admin\Desktop\Programs> 
```

Q3 - Write a C++ program to take length and breadth of a rectangle and print its area.

```
#include <iostream>

using namespace std;

int main()
{
    int length=10;
    int breadth=20;

    cout <<"Length " << length << endl;
    cout<< "Breadth" << breadth << endl;
    int area = length*breadth;
    cout << "Area is " << area << endl;
    return 0;
}
```

```
Q3.cpp > main()
1  #include <iostream>
2  using namespace std;
3  int main()
4  {
5      int length=10;
6      int breadth=20;
7      cout << "Length " <<length << endl;
8      cout << "Breadth " <<breadth << endl;
9      int area = length*breadth;
10     cout << "Area is " << area << endl;
11     return 0;
12 }
13

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

PS C:\Users\Admin\Desktop\Programs\Lessonplan3> cd
> cd "c:\Users\Admin\Desktop\Programs\" ; if ($?) { g++
$?) { .\Q3 }
Length 10
Breadth 20
Area is 200
PS C:\Users\Admin\Desktop\Programs> 
```

Q4 - Write a C++ program to calculate the cube of a number.

```
#include <iostream>

using namespace std;

int main()
{
    int x = 2;
    int cube;
    cout << "number is "<< x<<endl ;
    cout <<"cube of the number is "<< x*x*x << endl;
    return 0;
}
```



The screenshot shows a C++ IDE with a dark theme. The top pane displays the source code for a file named Q4.cpp, which is identical to the code provided in the previous block. The bottom pane is divided into two sections: 'PROBLEMS' and 'TERMINAL'. The 'TERMINAL' section shows the command prompt output after running the program. The prompt is 'PS C:\Users\Admin\Desktop\Programs\Lessonplan3>', followed by 'cd' to change the directory, then 'cd "c:\Users\Admin\Desktop\Programs\" ; i' (partially visible), then '\$?) { .\Q4 }', and finally the output 'number is 2' and 'cube of the number is 8'.

```
G: Q4.cpp > ...
1  #include <iostream>
2  using namespace std;
3
4  int main()
5  {
6      int x = 2;
7      int cube;
8      cout << "number is "<< x<<endl ;
9      cout <<"cube of the number is "<< x*x*x << endl;
10     return 0;
11 }
12

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

PS C:\Users\Admin\Desktop\Programs\Lessonplan3> cd
> cd "c:\Users\Admin\Desktop\Programs\" ; i
$?) { .\Q4 }
number is 2
cube of the number is 8
PS C:\Users\Admin\Desktop\Programs> 
```

Q5 - Write a C++ program to find size of basic data types.

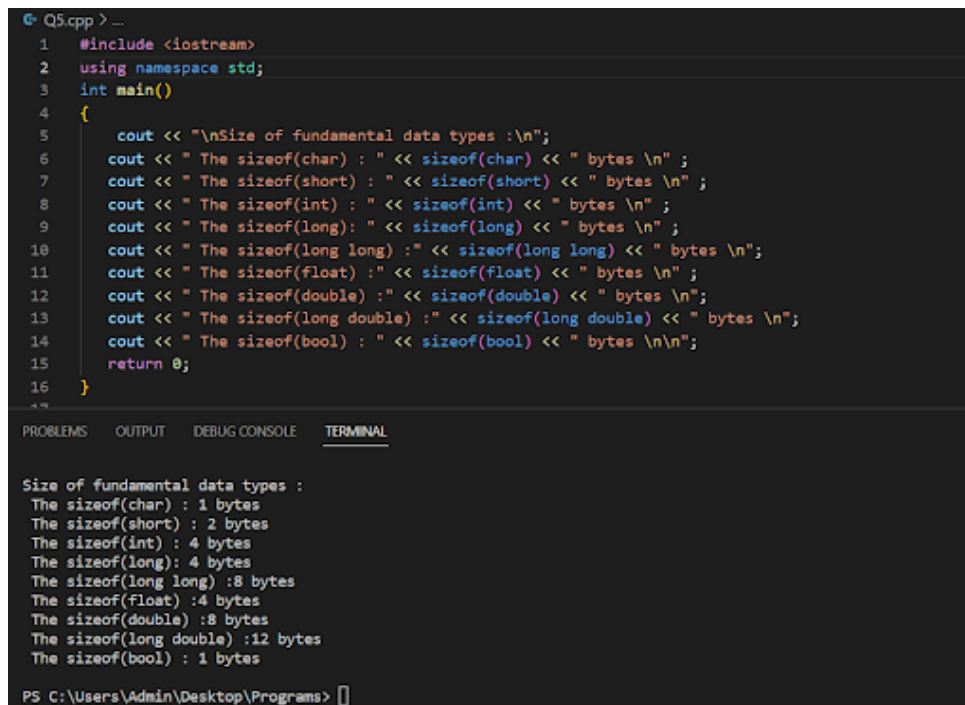
```
#include <iostream>

using namespace std;

int main()
{
    cout << "\nSize of fundamental data types :\n";

    cout << " The sizeof(char) : " << sizeof(char) << " bytes \n" ;
    cout << " The sizeof(short) : " << sizeof(short) << " bytes \n" ;
    cout << " The sizeof(int) : " << sizeof(int) << " bytes \n" ;
    cout << " The sizeof(long): " << sizeof(long) << " bytes \n" ;
    cout << " The sizeof(long long) : " << sizeof(long long) << " bytes \n";
    cout << " The sizeof(float) : " << sizeof(float) << " bytes \n" ;
    cout << " The sizeof(double) : " << sizeof(double) << " bytes \n";
    cout << " The sizeof(long double) : " << sizeof(long double) << " bytes \n";
    cout << " The sizeof(bool) : " << sizeof(bool) << " bytes \n\n";

    return 0;
}
```



```
Q5.cpp ...
1  #include <iostream>
2  using namespace std;
3  int main()
4  {
5      cout << "\nSize of fundamental data types :\n";
6      cout << " The sizeof(char) : " << sizeof(char) << " bytes \n" ;
7      cout << " The sizeof(short) : " << sizeof(short) << " bytes \n" ;
8      cout << " The sizeof(int) : " << sizeof(int) << " bytes \n" ;
9      cout << " The sizeof(long): " << sizeof(long) << " bytes \n" ;
10     cout << " The sizeof(long long) : " << sizeof(long long) << " bytes \n";
11     cout << " The sizeof(float) : " << sizeof(float) << " bytes \n" ;
12     cout << " The sizeof(double) : " << sizeof(double) << " bytes \n";
13     cout << " The sizeof(long double) : " << sizeof(long double) << " bytes \n";
14     cout << " The sizeof(bool) : " << sizeof(bool) << " bytes \n\n";
15     return 0;
16 }

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

Size of fundamental data types :
The sizeof(char) : 1 bytes
The sizeof(short) : 2 bytes
The sizeof(int) : 4 bytes
The sizeof(long): 4 bytes
The sizeof(long long) :8 bytes
The sizeof(float) :4 bytes
The sizeof(double) :8 bytes
The sizeof(long double) :12 bytes
The sizeof(bool) : 1 bytes

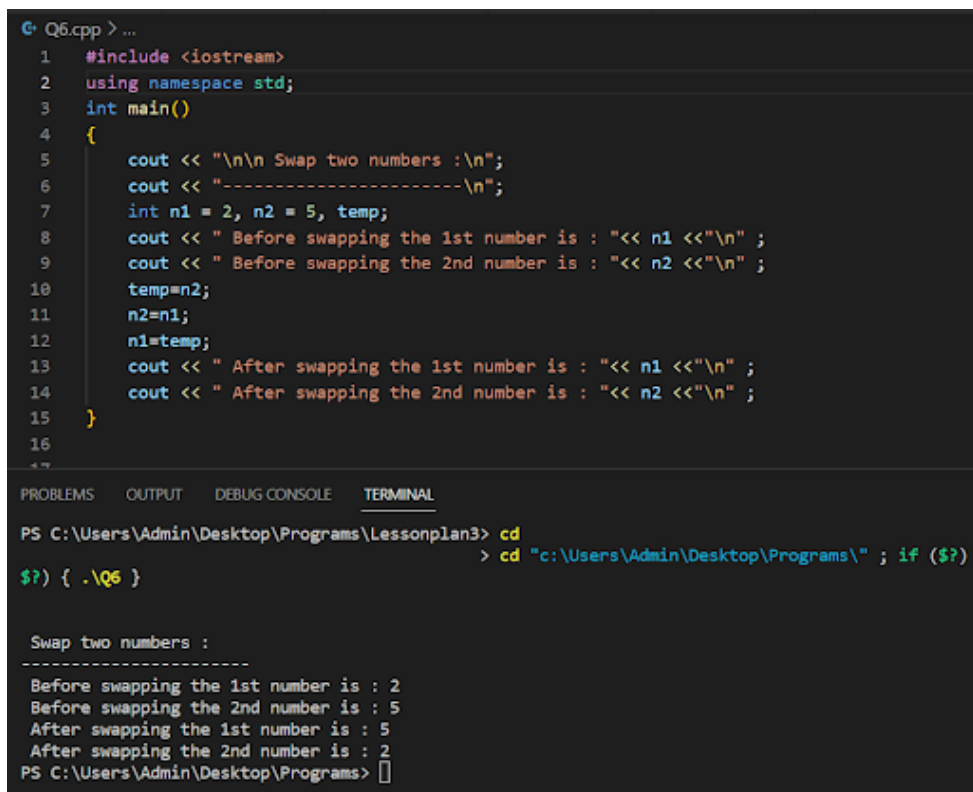
PS C:\Users\Admin\Desktop\Programs>
```

Q6 - Write a C++ program to swap two numbers with the help of a third variable.

```
#include <iostream>

using namespace std;

int main()
{
    cout << "\n\n Swap two numbers :\n";
    cout << "-----\n";
    int n1 = 2, n2 = 5, temp;
    cout << " Before swapping the 1st number is : "<< n1 << "\n" ;
    cout << " Before swapping the 2nd number is : "<< n2 << "\n" ;
    temp=n2;
    n2=n1;
    n1=temp;
    cout << " After swapping the 1st number is : "<< n1 << "\n" ;
    cout << " After swapping the 2nd number is : "<< n2 << "\n" ;
}
```



```
C: Q6.cpp > ...
1  #include <iostream>
2  using namespace std;
3  int main()
4  {
5      cout << "\n\n Swap two numbers :\n";
6      cout << "-----\n";
7      int n1 = 2, n2 = 5, temp;
8      cout << " Before swapping the 1st number is : "<< n1 << "\n" ;
9      cout << " Before swapping the 2nd number is : "<< n2 << "\n" ;
10     temp=n2;
11     n2=n1;
12     n1=temp;
13     cout << " After swapping the 1st number is : "<< n1 << "\n" ;
14     cout << " After swapping the 2nd number is : "<< n2 << "\n" ;
15 }
16

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
PS C:\Users\Admin\Desktop\Programs\Lessonplan3> cd
> cd "c:\Users\Admin\Desktop\Programs\" ; if ($?) {
$?) { .\Q6 }

Swap two numbers :
-----
Before swapping the 1st number is : 2
Before swapping the 2nd number is : 5
After swapping the 1st number is : 5
After swapping the 2nd number is : 2
PS C:\Users\Admin\Desktop\Programs> 
```