



Writing **C++ Program**  
using expressions to  
solve real world  
problems

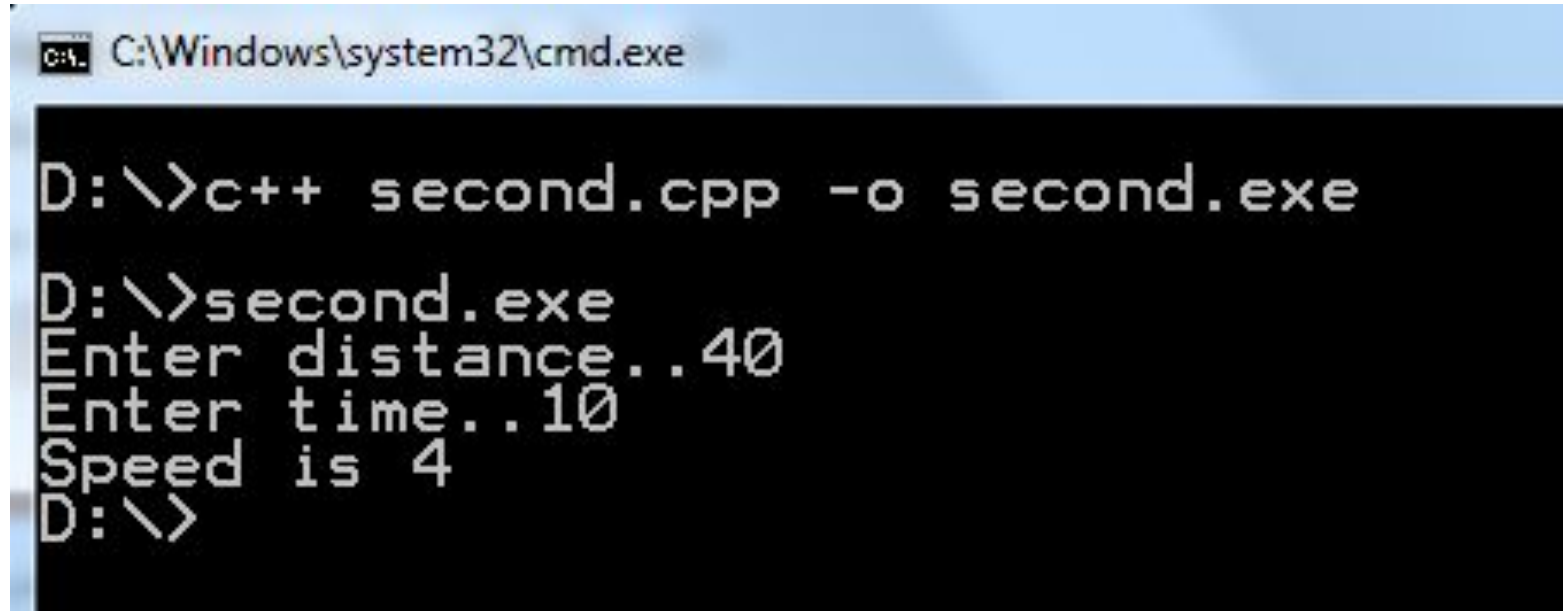


# Working Example

We want to write a **Program** that takes **Distance** (in kilometers) travelled by a car in **Time** (hours) and calculates its **Speed** (kilometer/hour).

# Working Example

We want to write a **Program** that takes **Distance** (in kilometers) travelled by a car in **Time** (hours) and calculates its **Speed** (kilometer/hour).



```
C:\Windows\system32\cmd.exe

D:\>c++ second.cpp -o second.exe

D:\>second.exe
Enter distance..40
Enter time..10
Speed is 4
D:\>
```

# Working Example: C++

we want to write a **Program** that takes **Distance** (in kilometers) travelled by a car in **Time** (hours) and calculates its **Speed** (kilometer/hour).

- Reserve three memory locations to store distance, time and speed.
- Take distance as input and store in to the variable
- Take time as input and store in to the variable
- Divide Distance by Time and store in variable speed
- Output speed on the console

# Working Example: Reserve in C++

1. Reserve three memory locations to store distance, time and speed.
2. Take distance as input and store in to the variable
3. Take time as input and store in to the variable
4. Divide Distance by Time and store in variable speed
5. Output speed on the console

```
#include <iostream>
using namespace std;
main()
{
    int distance;
    int time;
    int speed;
}
```

# Working Example: Reserve in C++

1. Reserve three memory locations to store distance, time and speed.
2. Take distance as input and store in to the variable
3. Take time as input and store in to the variable
4. Divide Distance by Time and store in variable speed
5. Output speed on the console

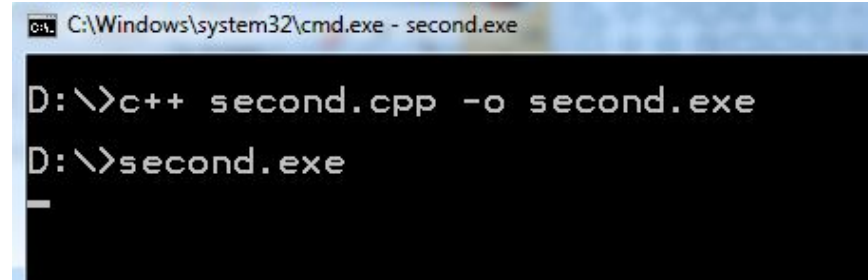
```
#include <iostream>
using namespace std;
main()
{
    int distance;
    int time;
    int speed;
    cin >> distance;
}
```

# Working Example: Reserve in C++

1. Reserve three memory locations to store distance, time and speed.
2. Take distance as input and store in to the variable

```
#include <iostream>
using namespace std;
main()
{
    int distance;
    int time;
    int speed;
    cin >> distance;
}
```

When we compile and execute this program, it will reserve three variable space and ask input from user with **blinking dash (cursor)**



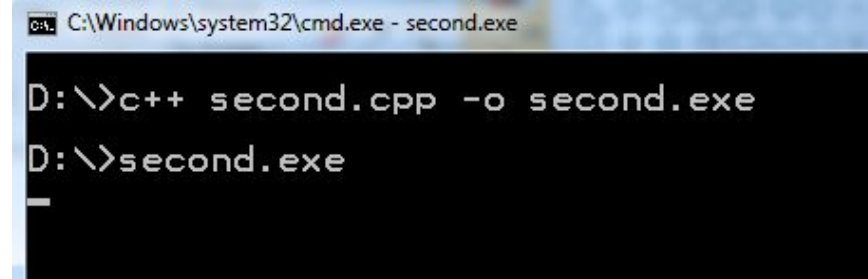
```
C:\Windows\system32\cmd.exe - second.exe
D:\>c++ second.cpp -o second.exe
D:\>second.exe
_
```

# Working Example: Reserve in C++

1. Reserve three memory locations to store distance, time and speed.
2. Take distance as input and store in to the variable

```
#include <iostream>
using namespace std;
main()
{
    int distance;
    int time;
    int speed;
    cin >> distance;
}
```

This may confuse the user of our program what to enter. Therefore, usually, whenever we ask for input we also show some message to user so that he/she understands what kind of input has to be entered.



```
C:\Windows\system32\cmd.exe - second.exe
D:\>c++ second.cpp -o second.exe
D:\>second.exe
_
```



# Working Example: Reserve in C++

1. Reserve three memory locations to store distance, time and speed.
2. Show message to user and Take distance as input and store in to the variable

```
#include <iostream>
using namespace std;
main()
{
    int distance;
    int time;
    int speed;
    cout << "Enter distance..";
    cin >> distance;
}
```

```
D:\>c++ second.cpp -o second.exe
D:\>second.exe
Enter distance..20
```

# Working Example: Reserve in C++

1. Reserve three memory locations to store distance, time and speed.
2. Show message to user and take distance as input and store in to the variable
3. Show message to user and Take time as input and store in to the variable
4. Divide Distance by Time and store in variable speed
5. Output speed on the console

```
#include <iostream>
using namespace std;
main()
{
    int distance;
    int time;
    int speed;
    cout << "Enter distance..";
    cin >> distance;
    cout << "Enter time..";
    cin >> time;
}
```

# Working Example: Reserve in C++

1. Reserve three memory locations to store distance, time and speed.
2. Show message to user and take distance as input and store in to the variable
3. Show message to user and Take time as input and store in to the variable
4. Divide Distance by Time and store in variable speed
5. Output speed on the console

```
#include <iostream>
using namespace std;
main()
{
    int distance;
    int time;
    int speed;
    cout << "Enter distance..";
    cin >> distance;
    cout << "Enter time..";
    cin >> time;
    speed = distance / time;
}
```

# Working Example: Reserve in C++

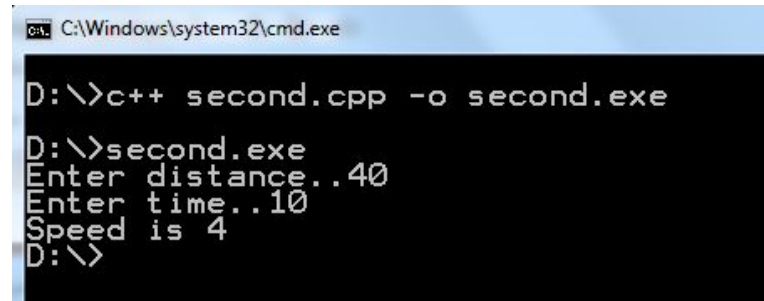
1. Reserve three memory locations to store distance, time and speed.
2. Show message to user and take distance as input and store in to the variable
3. Show message to user and Take time as input and store in to the variable
4. Divide Distance by Time and store in variable speed
5. Output speed on the console

```
#include <iostream>
using namespace std;
main()
{
    int distance;
    int time;
    int speed;
    cout << "Enter distance..";
    cin >> distance;
    cout << "Enter time..";
    cin >> time;
    speed = distance / time;
    cout<<"Speed is "<<speed;
}
```

# Working Example: Reserve in C++

1. Reserve three memory locations to store distance, time and speed.
2. Show message to user and take distance as input and store in to the variable
3. Show message to user and Take time as input and store in to the variable
4. Divide Distance by Time and store in variable speed
5. Output speed on the console

```
#include <iostream>
using namespace std;
main()
{
    int distance;
    int time;
    int speed;
    cout << "Enter distance..";
    cin >> distance;
    cout << "Enter time..";
    cin >> time;
    speed = distance / time;
    cout << "Speed is " << speed;
}
```



```
C:\Windows\system32\cmd.exe
D:\>c++ second.cpp -o second.exe
D:\>second.exe
Enter distance..40
Enter time..10
Speed is 4
D:\>
```

# Working Example: Reserve in C++

## Algorithm

- Reserve three memory locations to store distance, time and speed.
- Show message to user and take distance as input and store in to the variable
- Show message to user and Take time as input and store in to the variable
- Divide Distance by Time and store in variable speed
- Output speed on the console

## Program

```
#include <iostream>
using namespace std;
main()
{
    int distance;
    int time;
    int speed;
    cout << "Enter distance..";
    cin >> distance;
    cout << "Enter time..";
    cin >> time;
    speed = distance / time;
    cout<<"Speed is "<<speed;
}
```

```
C:\Windows\system32\cmd.exe
D:\>c++ second.cpp -o second.exe
D:\>second.exe
Enter distance..40
Enter time..10
Speed is 4
D:\>
```

# Learning Objective

Write a **C++** program that takes **input** from the user, **apply** **mathematical operations** and gives **output** on Console.



# Self Assessment

1. A Bit is a binary digit. It can hold only one of two values: 0 or 1. Bits are usually assembled into a group of 8 to form a Byte. A Kilobyte (KB) is equal to 1,024 bytes. A Megabyte (MB) is equal to 1,024 kilobytes, or 1,048,576 ( $1024 \times 1024$ ) bytes or 8,388,608 bits. Write a program that takes Megabytes from the user and converts it into Bits.

Input	Output
Megabytes: 2	16,777,216 Bits

