

Programming I

Lukas Tomaszek

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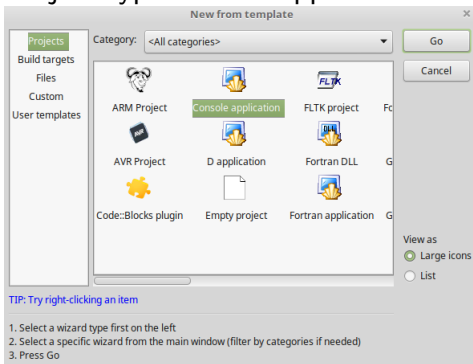
About the lecture?

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- Revision
- Variable
 - Data type
 - Identifier
- Constants
- Standard input / output
- Mathematical operations

- Environment - Code::Blocks
- Project type console application



- Environment - Code::Blocks
- Project type console application
- Language C++
- Path
 - Be careful - spaces
 - Be careful - network path

```
#include <iostream>

using namespace std;

int main()
{
    cout << "Hello world!" << endl;
    return 0;
}
```

Variable

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- Space in the memory for saving data

Variable

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- Space in the memory for saving data
 - Identifier - variable name
 - `_`, a-z, A-Z
 - 0-9
 - Data type
 - short, int, long
 - float, double
 - char
 - bool

At the beginning

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- int
- double
- string
 - sequence of characters

How to create a variable?

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```
int a;  
a = 3;
```

```
int variable = 5;
```

```
double real = 3.5, imag;
```

```
string text = "Hello, how are you?";
```

Constant

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- Key word const

```
const double PI = 3.1415;
```

Constant

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```
const int minuta_sekund = 60;
const int h_minut = 60;
const int hodina_sekund = h_minut * minuta_sekund;
const int d_hodin = 24;
const int den_sekund = d_hodin * hodina_sekund;
const int rok_dnu = 365;
const int rok_sekund = rok_dnu * den_sekund;
```

User interaction - standard input / output

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- Scanning a number.

User interaction - standard input / output

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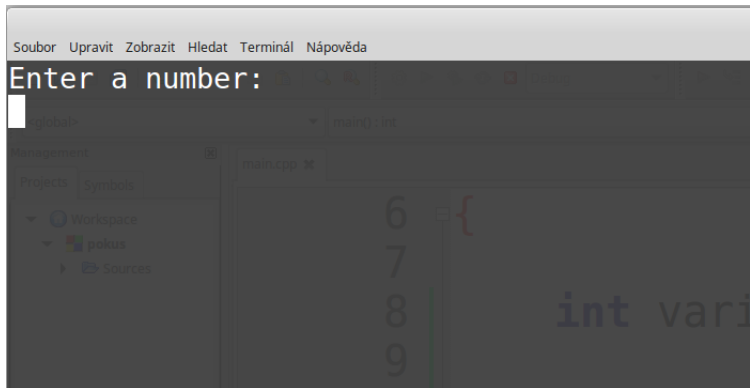
- cout, cin

```
int variable;
```

```
cout << "Enter a number: " << endl;
```

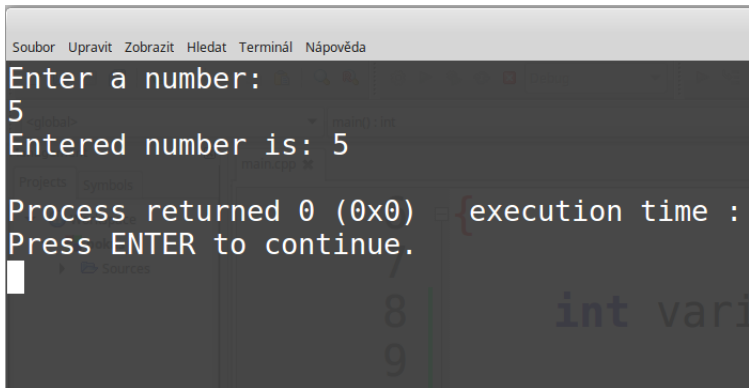
```
cin >> variable;
```

```
cout << "Entered number is: " << variable << endl;
```



The screenshot shows a C++ IDE with a terminal window at the top. The terminal displays the prompt "Enter a number:" followed by a cursor. Below the terminal, the IDE interface shows a project named "pokus" with a source file "main.cpp". The code in "main.cpp" is as follows:

```
6 int main() {  
7     int vari;  
8     int vari;  
9 }
```

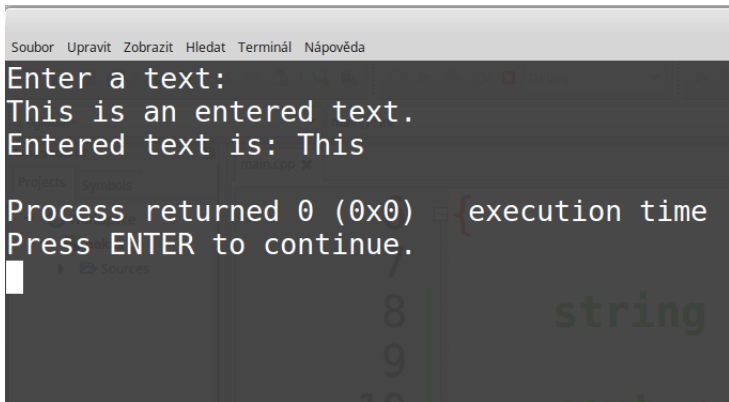


```
Soubor Upravit Zobrazit Hledat Terminál Nápověda
Enter a number:
5
Entered number is: 5
Process returned 0 (0x0)
Press ENTER to continue.
█
```

execution time :

int vari

```
string text;  
cout << "Enter a text: " << endl;  
cin >> text;  
cout << "Entered text is: " << text << endl;
```

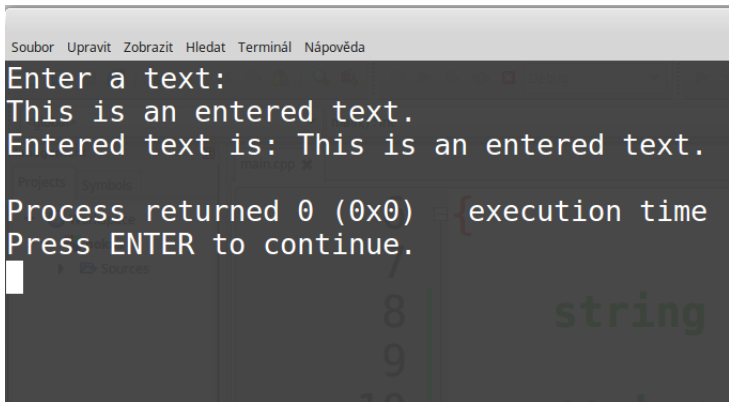



```
Soubor Upravit Zobrazit Hledat Terminál Nápověda
Enter a text:
This is an entered text.
Entered text is: This
Process returned 0 (0x0)
Press ENTER to continue.
```

execution time

string

```
string text;  
cout << "Enter a text: " << endl;  
getline(cin, text);  
cout << "Entered text is: " << text << endl;
```



```
Soubor Upravit Zobrazit Hledat Terminál Nápověda
Enter a text:
This is an entered text.
Entered text is: This is an entered text.
Process returned 0 (0x0)
Press ENTER to continue.
```

Mathematical operations

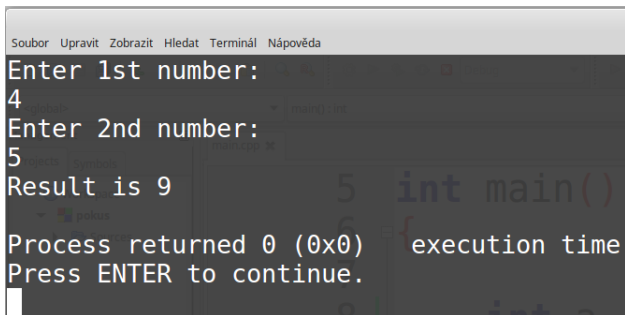
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- +
- -
- *
- /
- %

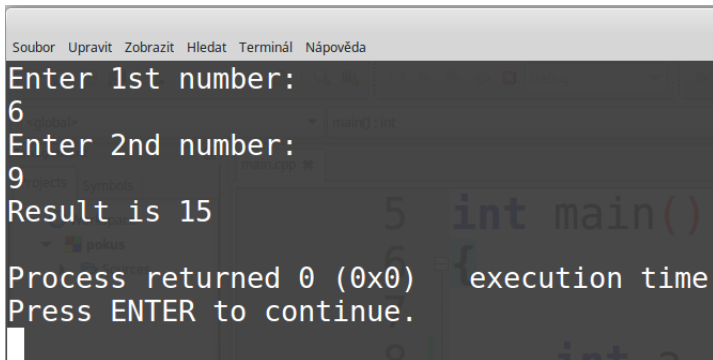
- Task - sum 2 numbers
 - What type of variables?
 - Where the values come from?
 - Where the values should be stored?
 - Do I need them latter?

```
int a, b;  
cout << "Enter 1st number: " << endl;  
cin >> a;  
cout << "Enter 2nd number: " << endl;  
cin >> b;  
cout << "Result is " << a + b << endl;
```



```
Soubor Upravit Zobrazit Hledat Terminál Nápověda
Enter 1st number:
4
Enter 2nd number:
5
Result is 9
Process returned 0 (0x0)
Press ENTER to continue.
```

```
int a, b;  
cout << "Enter 1st number: " << endl;  
cin >> a;  
cout << "Enter 2nd number: " << endl;  
cin >> b;  
int sum = a + b;  
cout << "Result is " << sum << endl;
```

```
Soubor Upravit Zobrazit Hledat Terminál Nápověda
Enter 1st number:
6
Enter 2nd number:
9
Result is 15
Process returned 0 (0x0)
Press ENTER to continue.
```

```
int a;  
cout << "Enter 1st number: " << endl;  
cin >> a;  
int b;  
cout << "Enter 2nd number: " << endl;  
cin >> b;  
int sum = a + b;  
cout << "Result is " << sum << endl;
```

```
int a, b;  
cout << "Enter two numbers: " << endl;  
cin >> a >> b;  
int sum = a + b;  
cout << "Result is " << sum << endl;
```

Division

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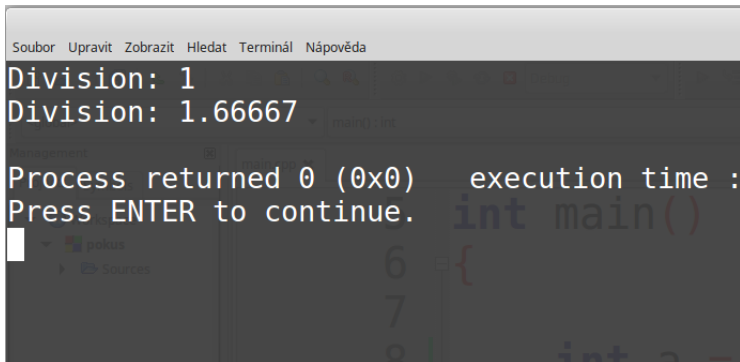
```
int a = 5, b = 3;  
cout << "Division: " << a / b << endl;
```

```
double c = 5, d = 3;  
cout << "Division: " << c / d << endl;
```

Division

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```
Soubor Upravit Zobrazit Hledat Terminál Nápověda
Division: 1
Division: 1.66667
Process returned 0 (0x0) execution time :
Press ENTER to continue.
```

Remainder after division

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```
int a = 5, b = 3;  
cout << "Division: " << a / b << endl;  
cout << "Remainder: " << a % b << endl;
```

```
double c = 5, d = 3;  
cout << "Division: " << c / d << endl;
```

Remainder after division

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```
Soubor Upravit Zobrazit Hledat Terminál Nápověda
Division: 1
Remainder: 2
Division: 1.66667
Process returned 0 (0x0)   execution time :
Press ENTER to continue.
█
```