Informática 1A

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Contents

1 Console Shortcuts

- `g++ program.cpp` to compile the program
- `./a.out` to run the program
- `python3 program.py`
- `Ctr+c` breaks a `while()` loop
- `Ctr+shift+c` copies information
- `Ctr+shift+v` pastes information

2 Include and Using

2.1 Using

```
using namespace std
```

2.2 Include

To include all the standard libraries `#include<bits/stdc++.h>` (DO NOT DO THAT)

- `#include<iostream>`
- `#include<cmath>`
  - `sqrt()`
  - `pow()`
- `#include<algorithm>`
  - `sort()`
  - `reverse(v.begin(), v.end())` reverses the string or vector
- `#include<iomanip>`

  - `cout<<setprecision(n)<<fixed` fixes n decimal places in doubles.

- `#include<string>`
  - `push_back()` adds a char to the string.
  - `reverse(b.begin(), b.end())` reverses the string or vector (algorithm)

3 Conversions

- From string to int
  `(int)s` s is the string
- From char to int
  `(int)c -'0'` c is the char
- From int to string
  `to_string(n)` n is the int
- From int to char
  `'0' + n` n is the int
- From string to char
  `s[0]` s is the string

4 Short cuts

- `i++`
- `sum += v[i]`

5 Vectors and matrices

To define a vector `vector<int> v(size, default inputs)`
Similar with a matrix `vector<vector<int>> v(size x, vector<int>(size y))`
Usefull functions:

- `v.size()` returns the size of the vector
- `v.push_back()` adds a term at the end of the vector
- `v.pop_back()` removes the last term of the vector
- `v.clear()` cleans the vector
- `sort(v.begin, v.end)` sorts the vector
- `reverse(v.begin, v.end)` reverses the vector
- `swap(v[i], v[j])` swaps i and j term

To define a new type of valiable `typedef vector<int> vec`
or `using Row = vector<int>; using Matrix = vector<Row>;`

6 Fundamental algorithms

6.1 MergeSort

6.2 structs

We can define our struct of Person as follows:
`struct Person{ string name; int age };`

```
bool comp(Person a, Person b){return a.age < b.age}
vector<Person> p;
```

Now we can sort `p` by ages:
`sort(p1.begin(), p1.end(), comp)`

7 Python

Remember to construct the function `def main()` and call it later.

7.1 Input and output

7.1.1 Output

For the output `print()`

7.1.2 Input

For the input first `from easyinput import read`. Then `read(type)` reads the input of the given type.
If you want to stop if no parameter is read use `while input != None`

7.2 Fix Decimals

To format the float a with n decimals `a.formatted = "{:.nf}".format(a)`

7.3 Conversions

- From int to string
  `str(n)` n is the int
- From string to int
  `int(s)` s is the string

8 Tips for the Exam

Here are some tips for the exam

- Local valiables
- Minimum posible cases
- Do not use `break`. Instead, use a `bool`
- One line `if()`