

p2.9

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1 Specification

Write a program to format a string containing a ten-digit phone number into a more readable form with parentheses and hyphens. e.g., "(415) 555-1212"

Take the substring consisting of the first three characters and surround it with "(" and ")". This will be the area code. Concatenate the area code, the substring consisting of the next three characters, a hyphen, and the substring consisting of the last four characters. This will be the formatted number.

2 Analysis/Design

The following pseudocode computes the formatted number

- Take the substring consisting of the first three characters
- surround it with "(" and ")". This is the area code.
- Concatenate the area code, the substring consisting of the next three characters, a hyphen, and the substring consisting of the last four characters. This will be the formatted number.

3 Implementation

Translate this pseudocode into a C++ program that reads a telephone number into a string variable, computes the formatted number, and prints it.

$\langle \text{area ?} \rangle \equiv$

```
string area = phone_number.substr(0,3);
```

◇

Fragment referenced in ?.

$\langle \text{prefix ?} \rangle \equiv$

```
string prefix = phone_number.substr(3,3);
```

◇

Fragment referenced in ?.

$\langle \text{suffix ?} \rangle \equiv$

```
string suffix = phone_number.substr(6,4);
```

◇

Fragment referenced in ?.

"p2_9.cpp" ?≡

```
#include <iostream>
#include <string>
#include <iomanip>
using namespace std;
```

```
int main()
{
```

```
    cout << "Please enter a phone number in 10 digit format: " << endl;
    string phone_number;
    cin >> phone_number;
```

```
     $\langle \text{area ?} \rangle$ ;
    cout << "Area      code   : " << setw(13) << area << endl;
```

```
     $\langle \text{prefix ?} \rangle$ ;
    cout << "Prefix    number: " << setw(13) << prefix << endl;
```

```
     $\langle \text{suffix ?} \rangle$ ;
    cout << "Suffix     number: " << setw(13) << suffix << endl;
```

```
    cout << "Formatted output: " << "(" + area + ")" + prefix + "-" + suffix << endl;
```

```
}
```

◇

4 Test

```
C:\Users\Echo\Desktop\cs102>nuweb p2_9.w
nuweb: you'll need to rerun nuweb after running latex

C:\Users\Echo\Desktop\cs102>g++ -o p2_9.exe p2_9.cpp

C:\Users\Echo\Desktop\cs102>p2_9
Please enter a phone number in 10 digit format:
5105551234
Area    code   :      510
Prefix  number:      555
Suffix  number:     1234
Formatted output: (510)555-1234
```