Step-by-step walkthrough for example on page 13 of the lecture notes: Object Initialization, Construction and Destruction

```
#include <iostream>           /* File: implicit-conversion-surprise.cpp */
#include <cstring>
using namespace std;
class Word {
  private:
    int frequency; char* str;
  public:
    Word(char c) {
      frequency = 1;   str = new char[2];   str[0] = c;   str[1] = '\0';
      cout << "call implicit char conversion\n";
    }
    Word(const char* s) {
      frequency = 1;   str = new char [strlen(s)+1];   strcpy(str, s);
      cout << "call implicit const char* conversion\n";
    }
    void print() const { cout << str << " : " << frequency << endl; }
};

void print_word(Word x) { x.print(); }
int main() { print_word("Titanic"); print_word('A'); return 0; }
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tmp

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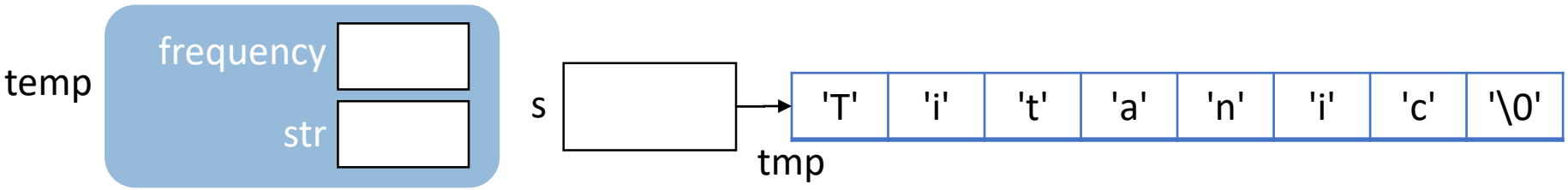

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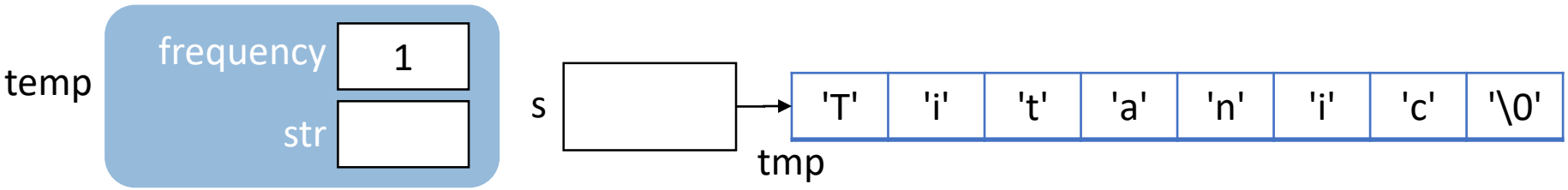

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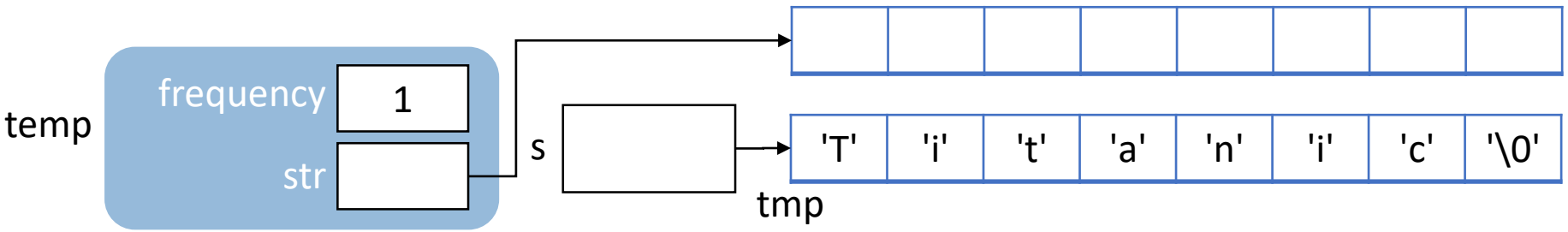

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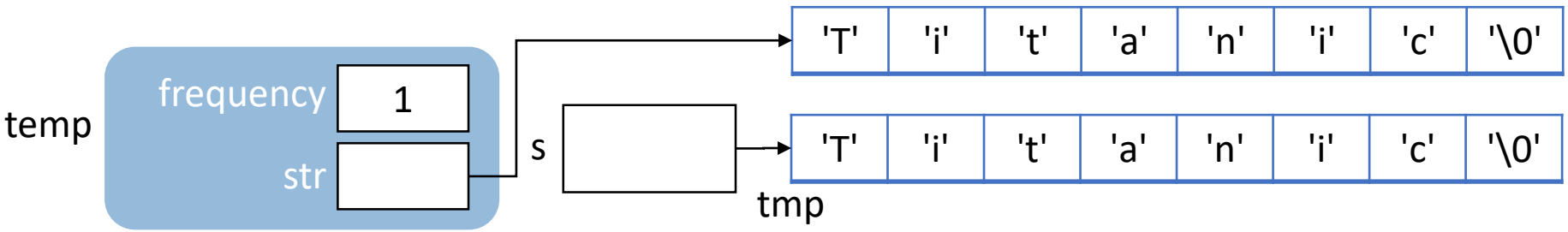

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Output:
call implicit const char* conversion
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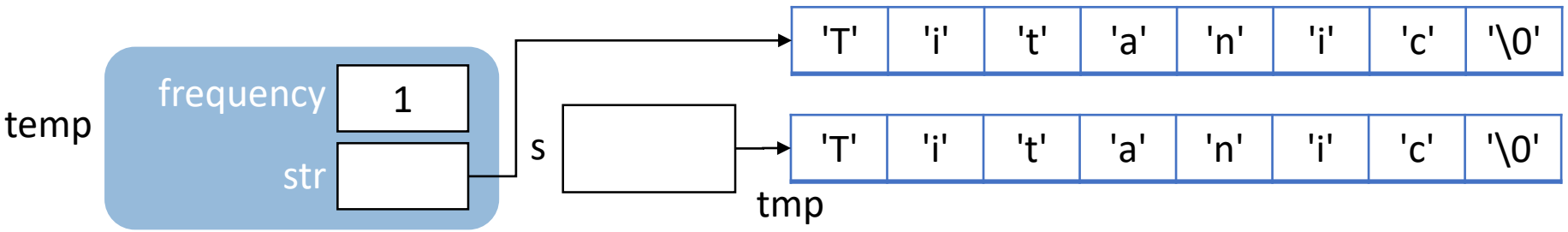

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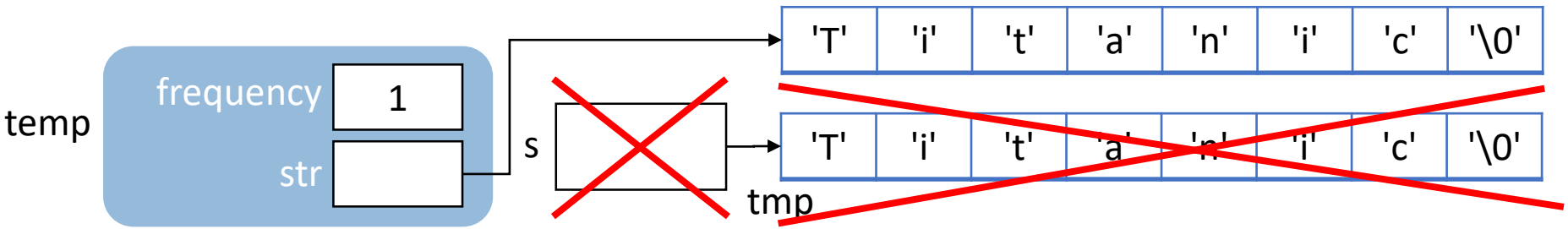

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/* File: implicit-conversion-surprise.cpp */

Output:
call implicit const char* conversion
```
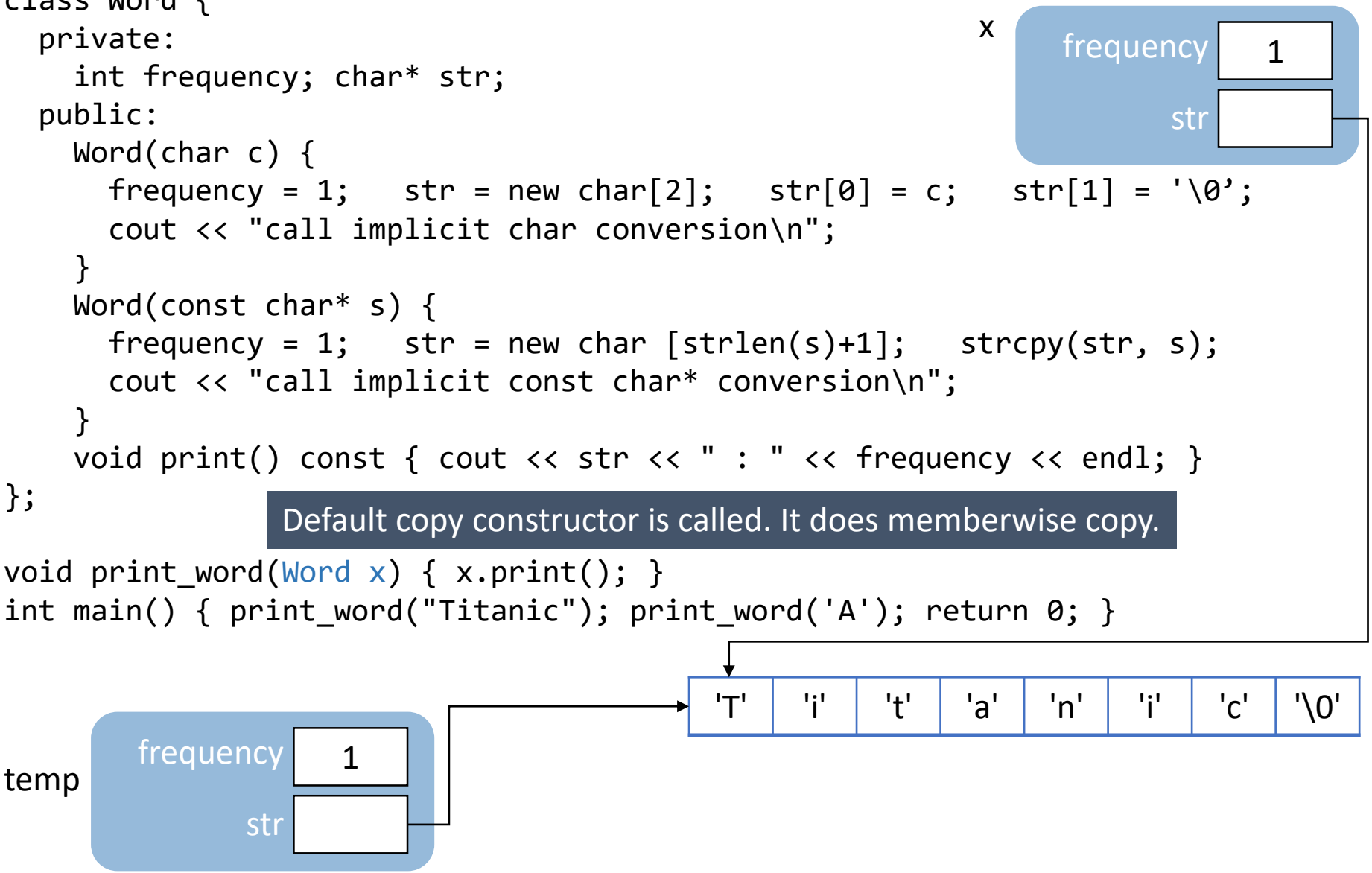

Default copy constructor is called. It does memberwise copy.



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void print_word(Word x) { x.print(); }
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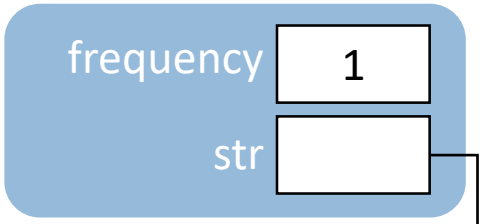
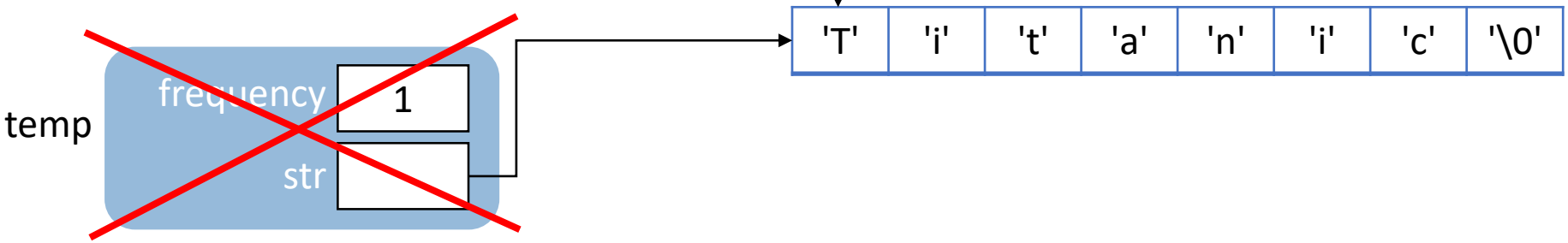
```
/* File: implicit-conversion-surprise.cpp */

Output:
call implicit const char* conversion
```



temp is destroyed after the expression has been evaluated!



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/* File: implicit-conversion-surprise.cpp */

Output:
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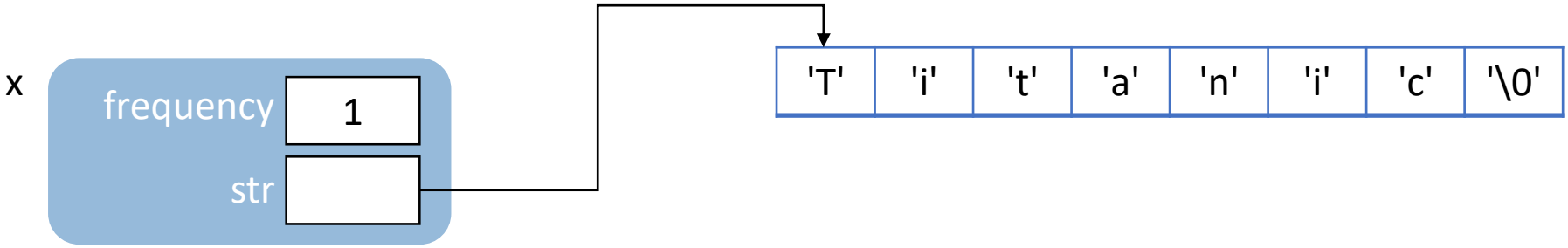

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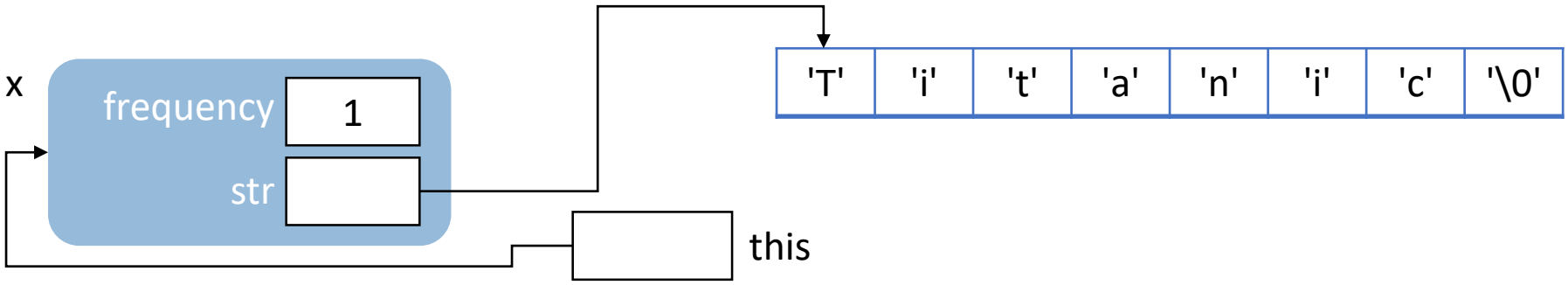
/* File: implicit-conversion-surprise.cpp */

Output:
call implicit const char* conversion
Titanic : 1
```



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Output:
call implicit const char* conversion
Titanic : 1
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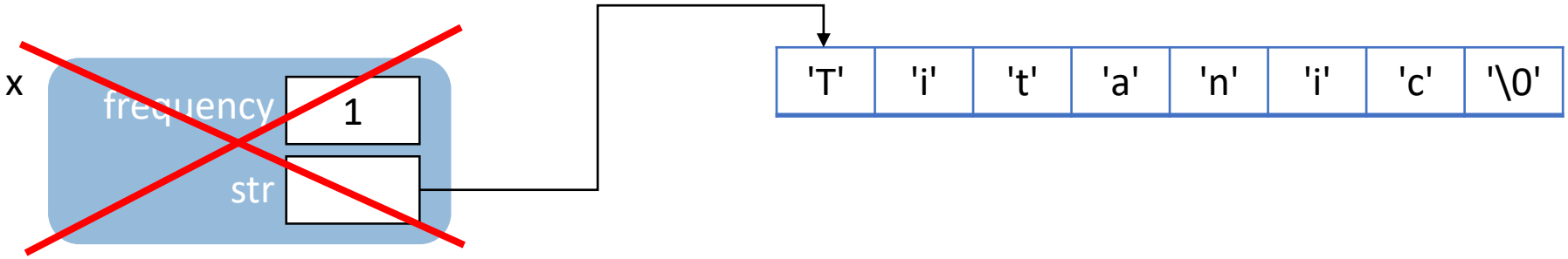

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Titanic : 1
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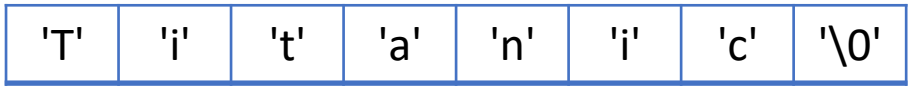

Memory leak

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Output:
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Titanic : 1
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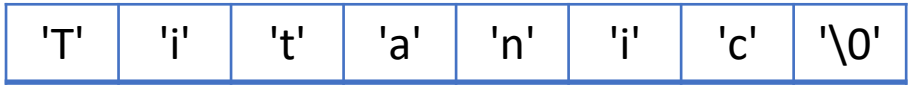

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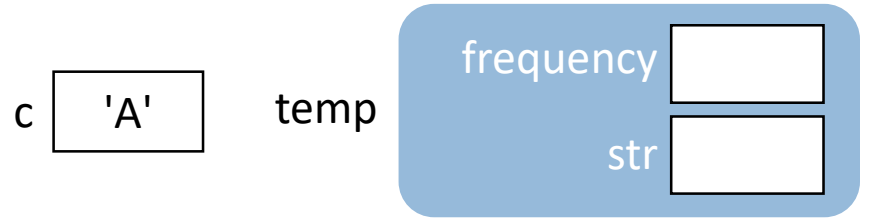

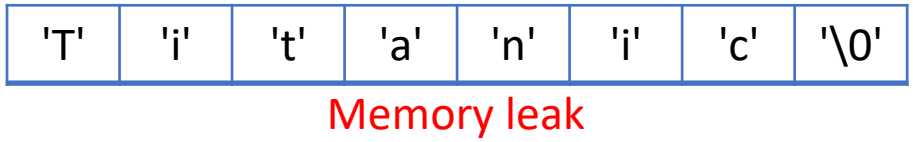

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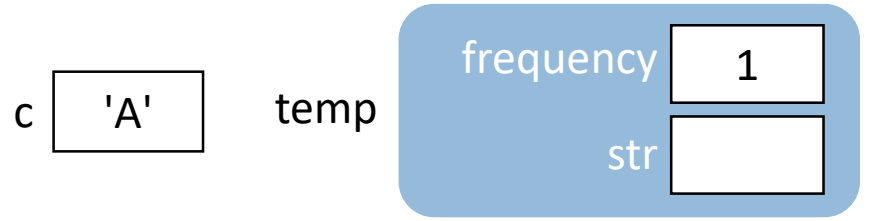

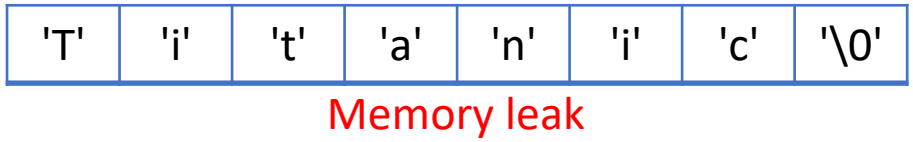

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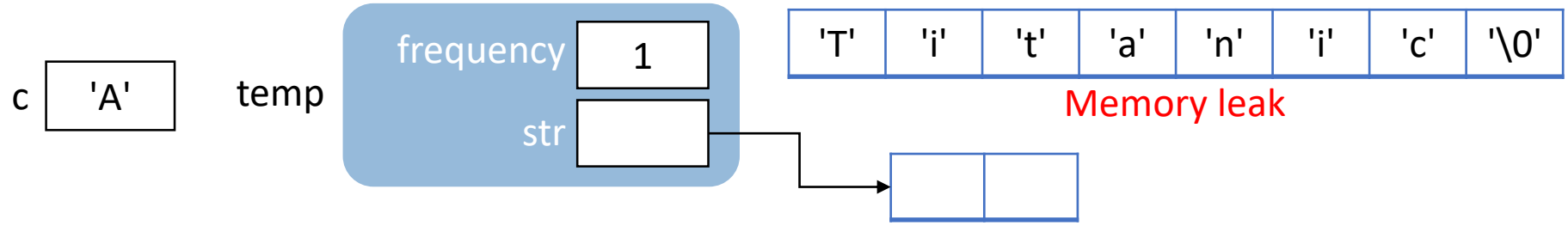

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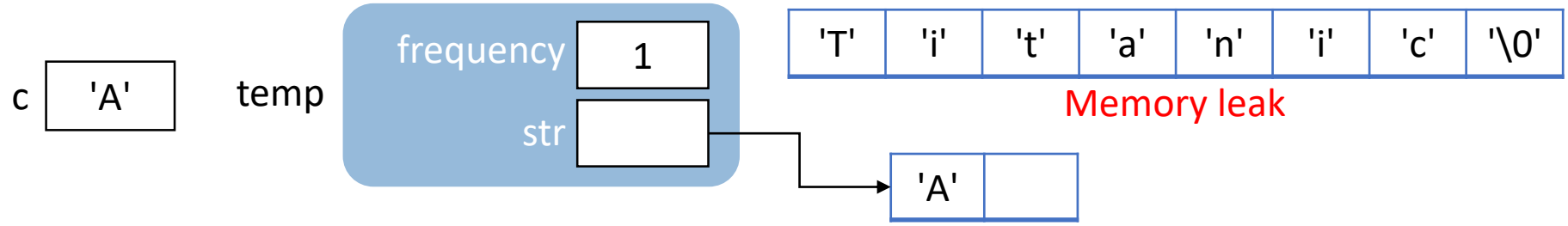

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class Word {
  private:
    int frequency; char* str;
  public:
    Word(char c) {
      frequency = 1;   str = new char[2];   str[0] = c;   str[1] = '\0';
      cout << "call implicit char conversion\n";
    }
    Word(const char* s) {
      frequency = 1;   str = new char [strlen(s)+1];   strcpy(str, s);
      cout << "call implicit const char* conversion\n";
    }
    void print() const { cout << str << " : " << frequency << endl; }
};

void print_word(Word x) { x.print(); }
int main() { print_word("Titanic"); print_word('A'); return 0; }
```
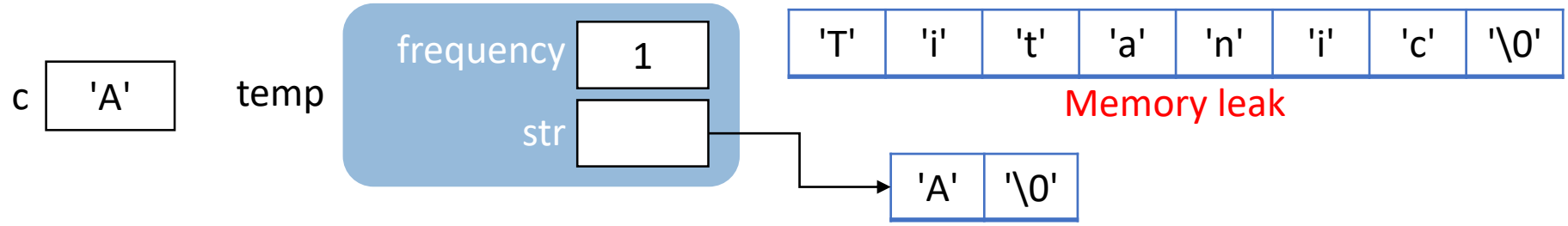

```
/* File: implicit-conversion-surprise.cpp */

Output:
call implicit const char* conversion
Titanic : 1
```



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#include <iostream>
#include <cstring>
using namespace std;
class Word {
  private:
    int frequency; char* str;
  public:
    Word(char c) {
      frequency = 1;   str = new char[2];   str[0] = c;   str[1] = '\0';
      cout << "call implicit char conversion\n";
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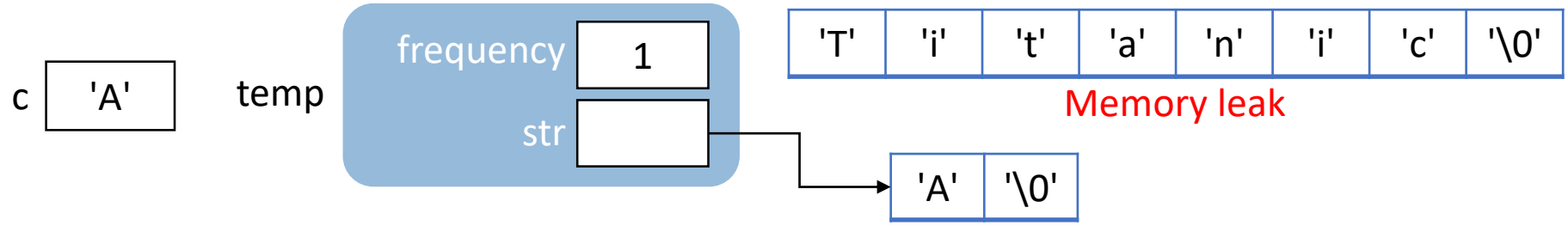
    }
    void print() const { cout << str << " : " << frequency << endl; }
};

void print_word(Word x) { x.print(); }
int main() { print_word("Titanic"); print_word('A'); return 0; }
```

```
/* File: implicit-conversion-surprise.cpp */

Output:
call implicit const char* conversion
Titanic : 1
call implicit char conversion
```



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      frequency = 1;   str = new char[2];   str[0] = c;   str[1] = '\0';
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      frequency = 1;   str = new char [strlen(s)+1];   strcpy(str, s);
      cout << "call implicit const char* conversion\n";
    }
    void print() const { cout << str << " : " << frequency << endl; }
};

void print_word(Word x) { x.print(); }
int main() { print_word("Titanic"); print_word('A'); return 0; }
```
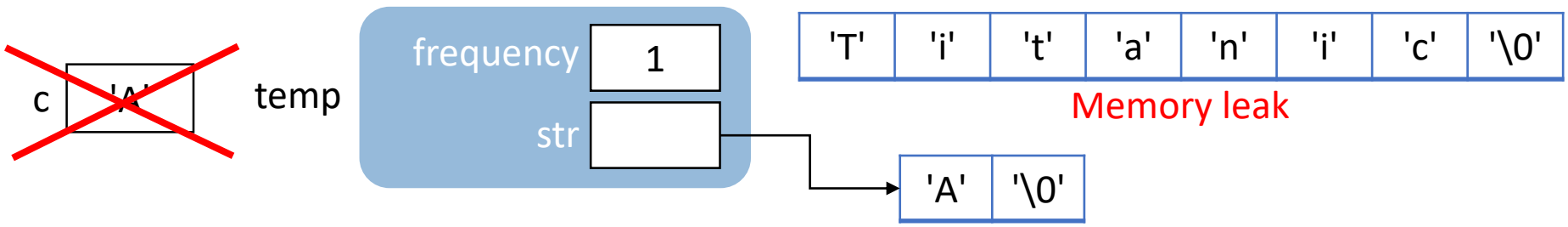

```
/* File: implicit-conversion-surprise.cpp */

Output:
call implicit const char* conversion
Titanic : 1
call implicit char conversion
```



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#include <cstring>
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      frequency = 1;   str = new char [strlen(s)+1];   strcpy(str, s);
      cout << "call implicit const char* conversion\n";
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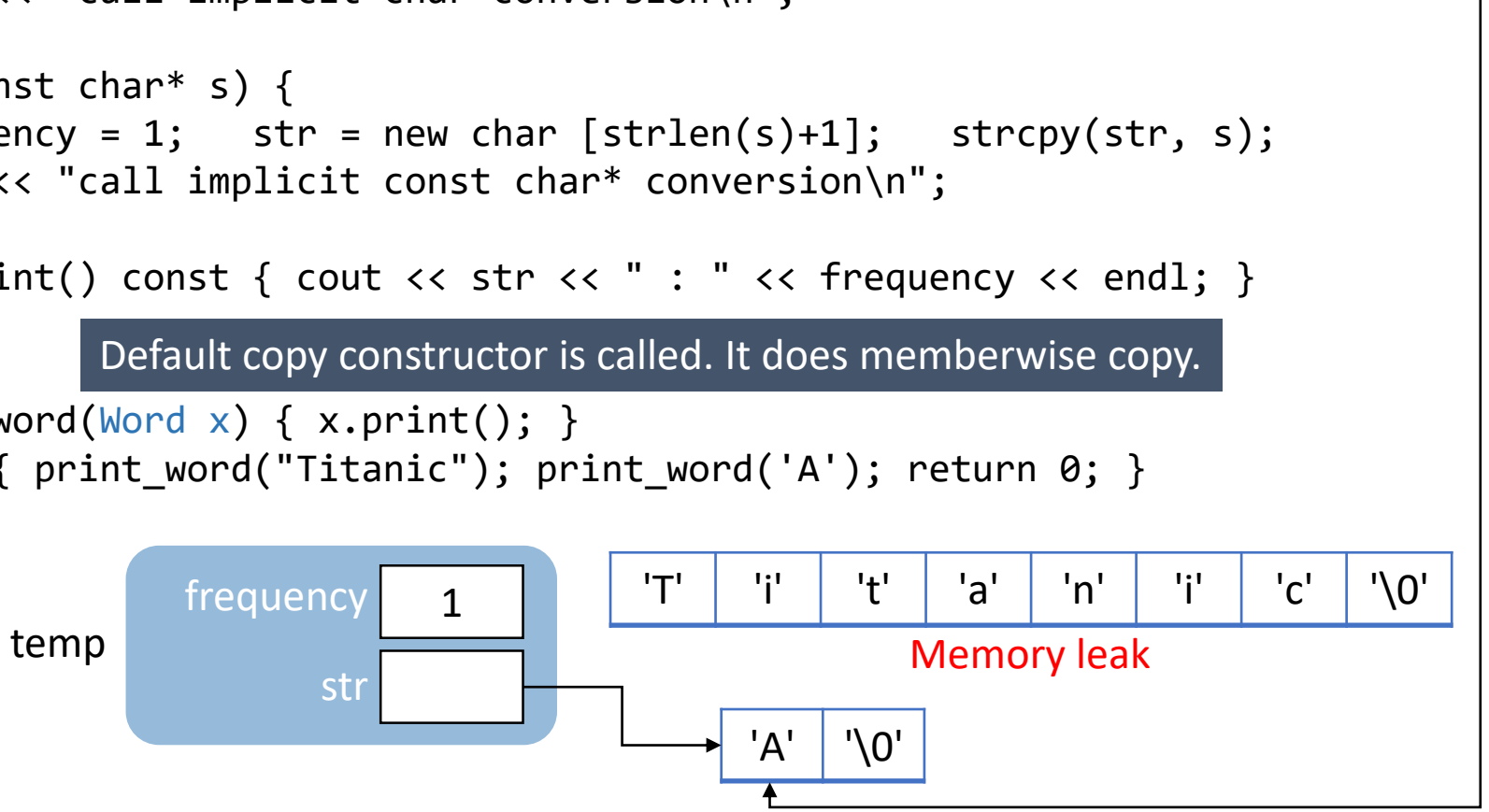
void print_word(Word x) { x.print(); }
int main() { print_word("Titanic"); print_word('A'); return 0; }
```

```
/* File: implicit-conversion-surprise.cpp */

Output:
call implicit const char* conversion
Titanic : 1
call implicit char conversion
```

Default copy constructor is called. It does memberwise copy.



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#include <iostream>
#include <cstring>
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  private:
    int frequency; char* str;
  public:
    Word(char c) {
      frequency = 1;   str = new char[2];   str[0] = c;   str[1] = '\0';
      cout << "call implicit char conversion\n";
    }
    Word(const char* s) {
      frequency = 1;   str = new char [strlen(s)+1];   strcpy(str, s);
      cout << "call implicit const char* conversion\n";
    }
    void print() const { cout << str << " : " << frequency << endl; }
};
void print_word(Word x) { x.print(); }
int main() { print_word("Titanic"); print_word('A'); return 0; }
```
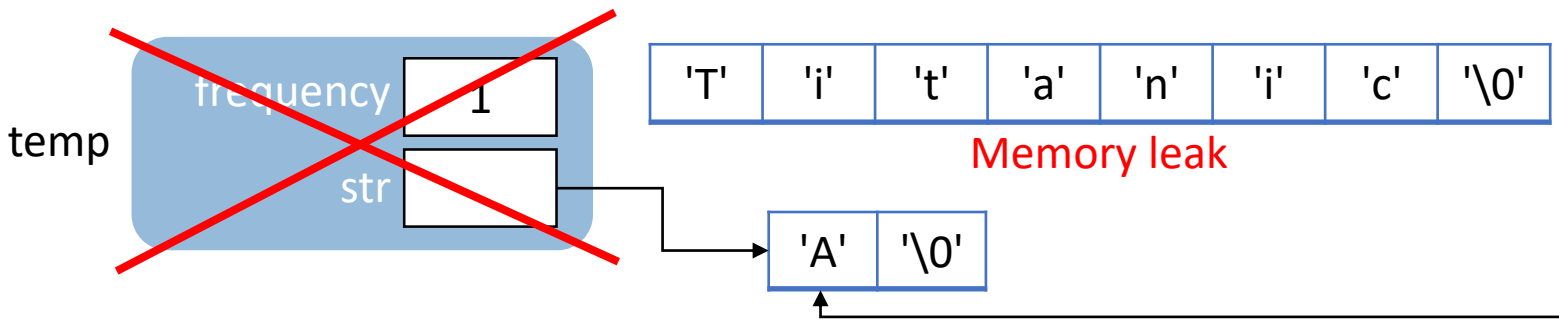

```
/* File: implicit-conversion-surprise.cpp */

Output:
call implicit const char* conversion
Titanic : 1
call implicit char conversion
```

temp is destroyed after the expression has been evaluated!



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#include <iostream>
#include <cstring>
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  private:
    int frequency; char* str;
  public:
    Word(char c) {
      frequency = 1;   str = new char[2];   str[0] = c;   str[1] = '\0';
      cout << "call implicit char conversion\n";
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};

void print_word(Word x) { x.print(); }
int main() { print_word("Titanic"); print_word('A'); return 0; }
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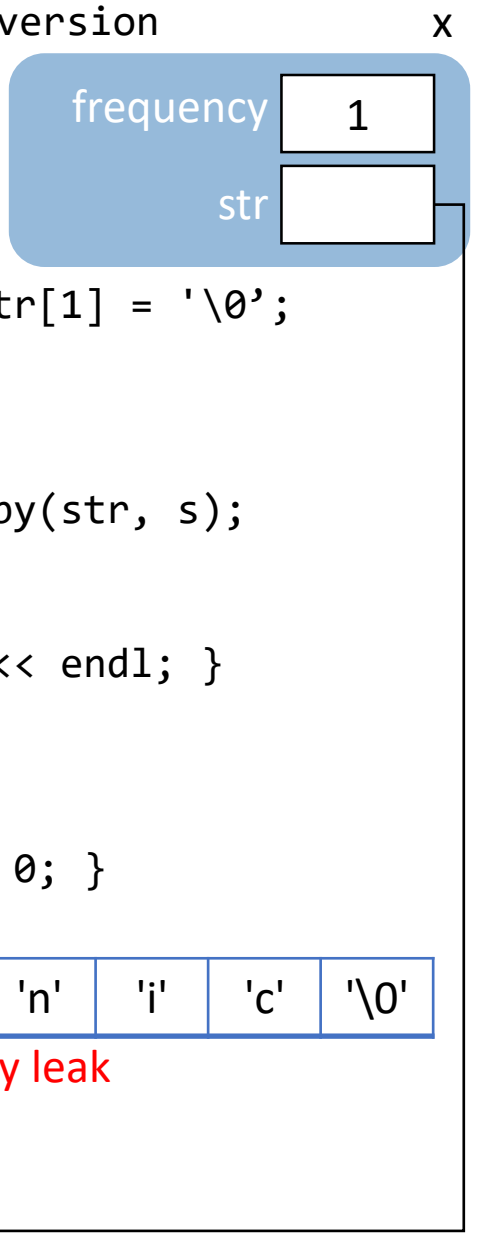
```
/* File: implicit-conversion-surprise.cpp */

Output:
call implicit const char* conversion
Titanic : 1
call implicit char conversion
```



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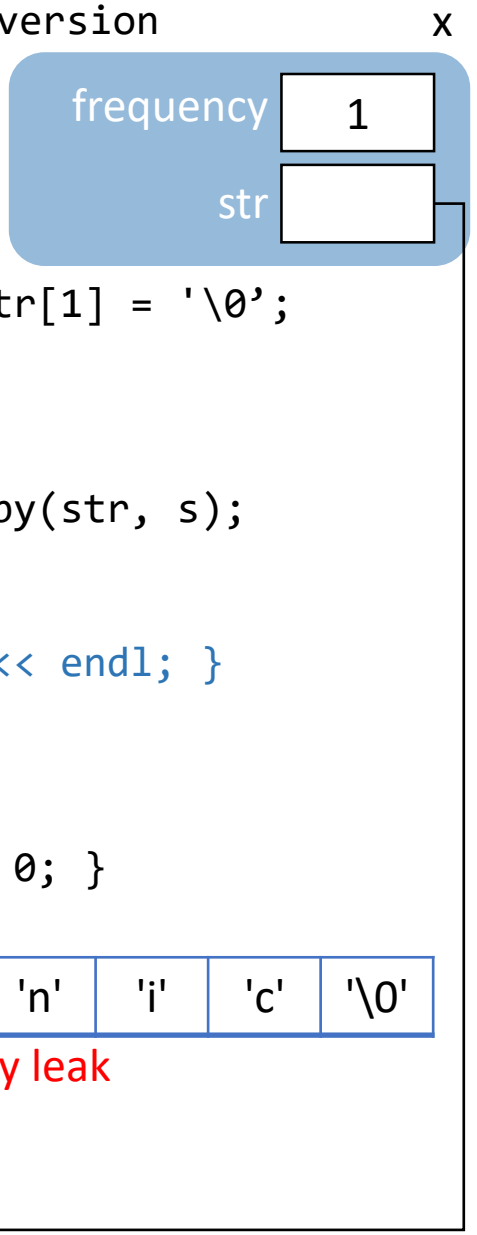
};

void print_word(Word x) { x.print(); }
int main() { print_word("Titanic"); print_word('A'); return 0; }
```

```
/* File: implicit-conversion-surprise.cpp */

Output:
call implicit const char* conversion
Titanic : 1
call implicit char conversion
A 1
```



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};

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int main() { print_word("Titanic"); print_word('A'); return 0; }
```
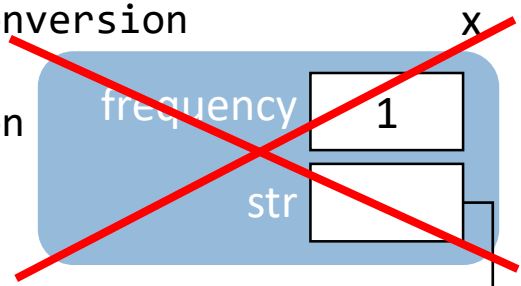
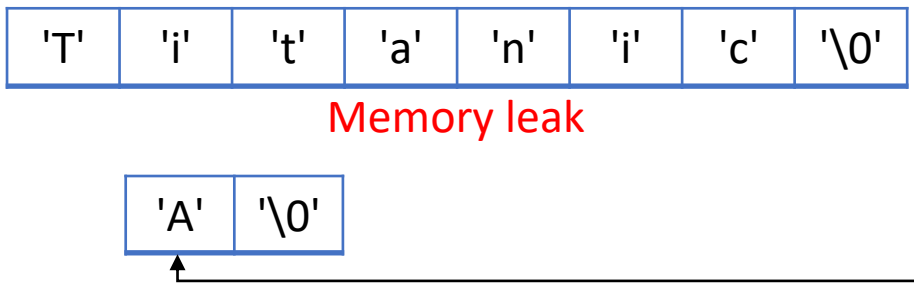

```
/* File: implicit-conversion-surprise.cpp */

Output:
call implicit const char* conversion
Titanic : 1
call implicit char conversion
A 1
```





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void print_word(Word x) { x.print(); }
int main() { print_word("Titanic"); print_word('A'); return 0; }
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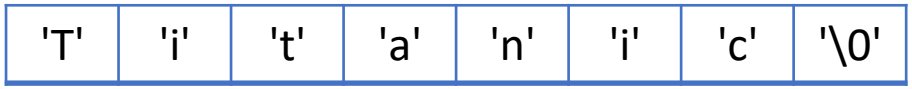
```
/* File: implicit-conversion-surprise.cpp */

Output:
call implicit const char* conversion
Titanic : 1
call implicit char conversion
A 1
```



Memory leak

Memory leak