

# 代码覆盖率

工具: gcov lcov

## 终局生成

执行命令:

```
./sudoku -c 10
```

LCOV - code coverage report									
Current view: <a href="#">top level</a> - /home/yuwensq/upmem/sudoku				Hit		Total		Coverage	
Test: <a href="#">app.info</a>				Lines:		61	261	23.4 %	
Date: 2023-06-29 03:48:57				Functions:		5	12	41.7 %	
Filename				Line Coverage ↕		Functions ↕			
<a href="#">Sudoku.cpp</a>				<div></div>	22.0 %	40 / 182	30.0 %	3 / 10	
<a href="#">main.cpp</a>				<div></div>	26.6 %	21 / 79	100.0 %	2 / 2	
Generated by: <a href="#">LCOV version 1.14</a>									

## 游戏生成

执行命令:

```
./sudoku -n 1000
```

LCOV - code coverage report								
Current view: <a href="#">top level</a> - /home/yuwensq/upmem/sudoku			Hit		Total		Coverage	
Test: <a href="#">app.info</a>			Lines:		96	261	36.8 %	
Date: 2023-06-29 03:54:57			Functions:		6	12	50.0 %	
Filename			Line Coverage ↕			Functions ↕		
<a href="#">Sudoku.cpp</a>			<div></div>	40.1 %	73 / 182	40.0 %	4 / 10	
<a href="#">main.cpp</a>			<div></div>	29.1 %	23 / 79	100.0 %	2 / 2	
Generated by: <a href="#">LCOV version 1.14</a>								

```
./sudoku -n 1000 -m 3
```

LCOV - code coverage report						
Current view: <a href="#">top level</a> - /home/yuwensq/upmem/sudoku			Hit		Total	
Test: <a href="#">app.info</a>			Lines:		98	261
Date: 2023-06-29 04:04:39			Functions:		6	12
						Coverage
						37.5 %
						50.0 %
Filename			Line Coverage ↕		Functions ↕	
<a href="#">Sudoku.cpp</a>			<div></div>	39.6 %	72 / 182	40.0 %
<a href="#">main.cpp</a>			<div></div>	32.9 %	26 / 79	100.0 %
						4 / 10
						2 / 2
Generated by: <a href="#">LCOV version 1.14</a>						

```
./sudoku -n 1000 -r 30~50
```

### LCOV - code coverage report

Current view: <a href="#">top level</a> - /home/yuwensq/upmem/sudoku		Hit	Total	Coverage
Test: app.info		Lines: 106	261	40.6 %
Date: 2023-06-29 04:05:41		Functions: 6	12	50.0 %
Filename	Line Coverage	Functions		
Sudoku.cpp	<div><div></div></div> 39.6 % 72 / 182	40.0 %	4 / 10	
main.cpp	<div><div></div></div> 43.0 % 34 / 79	100.0 %	2 / 2	

Generated by: LCOV version 1.14

```
./sudoku -n 1000 -u
```

### LCOV - code coverage report

Current view: <a href="#">top level</a> - /home/yuwensq/upmem/sudoku		Hit	Total	Coverage
Test: app.info		Lines: 147	261	56.3 %
Date: 2023-06-29 04:06:26		Functions: 9	12	75.0 %
Filename	Line Coverage	Functions		
Sudoku.cpp	<div><div></div></div> 65.9 % 120 / 182	70.0 %	7 / 10	
main.cpp	<div><div></div></div> 34.2 % 27 / 79	100.0 %	2 / 2	

Generated by: LCOV version 1.14

```
./sudoku -n 1000 -m 3 -r 20~55 -u
```

### LCOV - code coverage report

Current view: <a href="#">top level</a> - /home/yuwensq/upmem/sudoku		Hit	Total	Coverage
Test: app.info		Lines: 157	261	60.2 %
Date: 2023-06-29 04:07:47		Functions: 9	12	75.0 %
Filename	Line Coverage	Functions		
Sudoku.cpp	<div><div></div></div> 65.4 % 119 / 182	70.0 %	7 / 10	
main.cpp	<div><div></div></div> 48.1 % 38 / 79	100.0 %	2 / 2	

Generated by: LCOV version 1.14

## 数独求解

执行命令：

```
./sudoku -s game.txt
```

### LCOV - code coverage report

Current view: <a href="#">top level</a> - /home/yuwensq/upmem/sudoku		Hit	Total	Coverage
Test: app.info		Lines: 105	261	40.2 %
Date: 2023-06-29 04:11:42		Functions: 7	12	58.3 %
Filename	Line Coverage	Functions		
Sudoku.cpp	<div><div></div></div> 45.1 % 82 / 182	50.0 %	5 / 10	
main.cpp	<div><div></div></div> 29.1 % 23 / 79	100.0 %	2 / 2	

## 错误测试

这一部分我们输入错误的指令，检测程序的错误处理能力，分别执行如下命令：

```
./sudoku -c -10
./sudoku -c 10000000
./sudoku -s not_exist_file.txt
./sudoku -n -10
./sudoku -n 100000
./sudoku -n 10 -m -1
./sudoku -n 10 -m 4
```

```
./sudoku -n -r 10~20
./sudoku -n -r 55~60
./sudoku -c 10 -u
./sudoku -c 10 -m 3
./sudoku -c 10 -r 20~25
./sudoku -c 10 -s game.txt
./sudoku -c 10 -n 10
```

由于检测到错误后程序将会报错并退出，代码覆盖率较低，这里省略具体覆盖率结果的展示。

## 总测试覆盖率

执行完所有上述的测试指令后，总的代码覆盖率如下图所示：

LCOV - code coverage report					
Current view: <a href="#">top level</a> - /home/yuwensq/upmem/sudoku			Hit	Total	Coverage
Test: <a href="#">all.info</a>			Lines:	239	261
Date: 2023-06-30 00:50:27			Functions:	11	12
Filename	Line Coverage ↕		Functions ↕		
<a href="#">Sudoku.cpp</a>	<div><div></div></div>	95.6 %	174 / 182	90.0 %	9 / 10
<a href="#">main.cpp</a>	<div><div></div></div>	82.3 %	65 / 79	100.0 %	2 / 2
Generated by: LCOV version 1.14					