

```
1 *****
2 *   PROGRAMMED BY : Carlos Aguilera
3 *   CLASS          : CS1B
4 *   SECTION        : MW: 7:30p - 9:50p
5 *   LAB #1         :
6 *****
7
8 Welcome to coin toss! Get 3 heads in a row to win!
9
10 What is your name?      Carlos Aguilera
11 What is your gender (m/f): m
12
13
14 Try to get 3 heads in a row. Good luck Mr. Aguilera
15
16 Press <enter> to flip
17 HEAD
18 Press <enter> to flip
19 HEAD
20 Press <enter> to flip
21 TAIL
22 Press <enter> to flip
23 TAIL
24 Press <enter> to flip
25 HEAD
26 Press <enter> to flip
27 HEAD
28 Press <enter> to flip
29 HEAD
30 It took you 7 tosses to get 3 heads in a row.
31 On average you flipped heads 71% of the time
32
33 *****
34 *   PROGRAMMED BY : Carlos Aguilera
35 *   CLASS          : CS1B
36 *   SECTION        : MW: 7:30p - 9:50p
37 *   LAB #1         :
38 *****
39
40 Welcome to coin toss! Get 3 heads in a row to win!
41
42 What is your name?      Carla Aguilera
43 What is your gender (m/f): f
44
45
46 Try to get 3 heads in a row. Good luck Ms. Aguilera
47
48 Press <enter> to flip
49 HEAD
50 Press <enter> to flip
51 HEAD
52 Press <enter> to flip
53 TAIL
54 Press <enter> to flip
55 TAIL
56 Press <enter> to flip
57 TAIL
58 Press <enter> to flip
59 HEAD
```

```
60 Press <enter> to flip
61 HEAD
62 Press <enter> to flip
63 HEAD
64 It took you 8 tosses to get 3 heads in a row.
65 On average you flipped heads 62% of the time
66
67 *****
68 *   PROGRAMMED BY : Carlos Aguilera
69 *   CLASS         : CS1B
70 *   SECTION       : MW: 7:30p - 9:50p
71 *   LAB #1        :
72 *****
73
74 Welcome to coin toss! Get 3 heads in a row to win!
75
76 What is your name?      Kirian Aguilera
77 What is your gender (m/f): M
78
79
80 Try to get 3 heads in a row. Good luck Mr. Aguilera
81
82 Press <enter> to flip
83 HEAD
84 Press <enter> to flip
85 TAIL
86 Press <enter> to flip
87 TAIL
88 Press <enter> to flip
89 TAIL
90 Press <enter> to flip
91 HEAD
92 Press <enter> to flip
93 HEAD
94 Press <enter> to flip
95 HEAD
96 It took you 7 tosses to get 3 heads in a row.
97 On average you flipped heads 57% of the time
```

```

1 #include "main.hpp"
2
3 void heading()
4 {
5     /*****
6      * CONSTANTS
7      * -----
8      * OUTPUT - USED FOR CLASS HEADING
9      * -----
10     * PROGRAMMER : Programmer's Name
11     * CLASS      : Student's Course
12     * SECTION    : Class Days and Times
13     * LAB_NUM    : Lab Number (specific to this lab)
14     * LAB_NAME   : Title of the Lab
15     *****/
16     const char PROGRAMMER[] = "Carlos Aguilera";
17     const char CLASS[]      = "CS1B";
18     const char SECTION[]    = "MW: 7:30p - 9:50p";
19     const int  LAB_NUM      = 1;
20     const char LAB_NAME[]   = "";
21
22     // (variable declarations go here)
23
24
25     /*****
26      * OUTPUT - Class Heading
27      *****/
28     std::cout << std::left;
29     std::cout << "*****\n";
30     std::cout << "*   PROGRAMMED BY : " << PROGRAMMER << std::endl;
31     std::cout << "*   " << std::setw(14) << "CLASS" << ": " << CLASS <<
std::endl;
32     std::cout << "*   " << std::setw(14) << "SECTION" << ": " << SECTION <<
std::endl;
33     std::cout << "*   LAB #" << std::setw(9) << LAB_NUM << ": " << LAB_NAME <<
std::endl;
34     std::cout << "*****\n\n";
35     std::cout << std::right;
36 }

```

```
1 #pragma once
2 #include <iostream>
3 #include <iomanip>
4
5 void heading(); //Displays heading to console
6 void userInformation(); //Handles user data ex. name, and sex
7 bool coinFlip(); //Returns true or false depending on whether it generates a 0
  or 1
8 size_t averageLogic(const size_t &totalHeadCount, const size_t
  &totalFlipCount); //Returns average head flip per total flip count in
  percentage
9 void outputResults(const size_t &totalFlipCount, size_t averageHeadFlip);
  //Displays results of the program
```

```

1  /*****
2  * AUTHOR       : Carlos Aguilera
3  * STUDENT ID   : 1152562
4  * LAB #2       : Coin Flip
5  * CLASS        : CS1B
6  * SECTION      : M-W
7  * DUE DATE     : 02.02.22
8  *****/
9  #include "main.hpp"
10 /*****
11 * Title: Coin Flip
12 * -----
13 * This program will output the class heading
14 * -----
15 * INPUT:
16 * char flipInitializer {}; //IN      -Input of the \n
17 * OUTPUT:
18 * size_t flipCount {0}; //CALC & OUT -Total flip count
19 *****/
20 int main()
21 {
22     heading();
23
24     std::cout << "Welcome to coin toss! Get 3 heads in a row to win!\n\n";
25     userInformation();
26
27     size_t currentHeadCount {0}; //CALC -Increase by one if heads is flipped,
    resets to 0 if tails is flipped
28     size_t totalHeadCount {0}; //CALC -Total head count for the run of the
    program
29     size_t flipCount {0}; //CALC & OUT -Total flip count
30     char flipInitializer {}; //IN      -Input of the \n
31
32     while (currentHeadCount != 3) //while currentHeadCount is not equal to 3
    keep looping
33     {
34         std::cout << "Press <enter> to flip";
35         std::cin.get(flipInitializer);
36
37         if(flipInitializer == '\n') //if flipInitializer has \n stored the true
38         {
39             if(coinFlip()) { //if function coin flip returns true then run
40                 std::cout << "HEAD\n";
41                 ++currentHeadCount;
42                 ++totalHeadCount;
43             } else { //else run
44                 std::cout << "TAIL\n";
45                 currentHeadCount = 0; //reset currentHeadCount to 0;
46             }
47             ++flipCount;
48         } else { //else reset buffer and flip again
49             std::cin.ignore(10, '\n');
50         }
51     }
52     outputResults(flipCount, averageLogic(totalHeadCount, flipCount));
53     return 0;
54 }

```

```

1 #include "main.hpp"
2 #include <string>
3
4 void userInformation()
5 {
6     std::string userName {}; //IN -Name of user
7     char userGender {}; //IN -Gender of user
8
9     std::cout << std::left;
10    std::cout << std::setw(28) << "What is your name?";
11    std::getline(std::cin, userName); //gets entire line then resets buffer
12    userName = userName.substr(userName.find(' ') + 1,
    userName.size()); //calls method substr for userName starts at character ' '
    and ends at the end of the string
13
14    std::cout << std::setw(28) << "What is your gender (m/f):";
15    std::cin.get(userGender);
16    std::cin.ignore(100, '\n'); //buffer reset always after .get is used
17
18    std::cout << "\n\nTry to get 3 heads in a row. Good luck ";
19    if(userGender == 'm' || userGender == 'M') //if userGender stores 'm' or
    'M' then true
20        std::cout << "Mr. " << userName << "\n\n";
21    else if(userGender == 'f' || userGender == 'F') //else if userGender stores
    'f' or 'F' then true
22        std::cout << "Ms. " << userName << "\n\n";
23    else //else run
24        std::cout << userName << "\n\n";
25    std::cout << std::right;
26 }

```

```
1 #include "stdlib.h"
2 #include "time.h"
3
4 bool coinFlip()
5 {
6     srand(time(NULL)); //sets seed to time function gets called
7     return static_cast<bool>(rand() % 2); //returns 0 or 1 and gets casted to a
8     bool
9 }
```

```
1 #include "main.hpp"
2
3 size_t averageLogic(const size_t &totalHeadCount, const size_t
&totalFlipCount)
4 {
5     /*
6         size_t totalHeadCount; CALC -Gets divided by totalFlipCount
7         size_t totalFlipCount; CALC -Divides totalHeadCount and the result
gets multiplied
8     */
9     return double(totalHeadCount)/totalFlipCount * 100; // returns a type
size_t variable
10 }
```



```
1 #include "main.hpp"
2
3 void outputResults(const size_t &totalFlipCount, size_t averageHeadFlip)
4 {
5     /*
6         const size_t &totalFlipCount; OUT -total flip count
7         size_t averageHeadFlip; OUT -average head flip per total flips in
8         percentage
9     */
10    std::cout << "It took you " << totalFlipCount << " tosses to get 3 heads
11    in a row.\n";
12    std::cout << "On average you flipped heads " << averageHeadFlip << "% "<<
13    "of the time\n";
14 }
```