```
**************************************************
*   PROGRAMMED BY : Carlos Aguilera
*   CLASS         : CS1B
*   SECTION       : MW: 7:30p - 9:50p
*   LAB #1        :
**************************************************

Welcome to coin toss! Get 3 heads in a row to win!

What is your name?          Carlos Aguilera
What is your gender (m/f):  m


Try to get 3 heads in a row. Good luck Mr. Aguilera

Press <enter> to flip
HEAD
Press <enter> to flip
HEAD
Press <enter> to flip
TAIL
Press <enter> to flip
TAIL
Press <enter> to flip
HEAD
Press <enter> to flip
HEAD
Press <enter> to flip
HEAD
It took you 7 tosses to get 3 heads in a row.
On average you flipped heads 71% of the time

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**************************************************

Welcome to coin toss! Get 3 heads in a row to win!

What is your name?          Carla Aguilera
What is your gender (m/f):  f


Try to get 3 heads in a row. Good luck Ms. Aguilera

Press <enter> to flip
HEAD
Press <enter> to flip
HEAD
Press <enter> to flip
TAIL
Press <enter> to flip
TAIL
Press <enter> to flip
TAIL
Press <enter> to flip
HEAD
```

```
Press <enter> to flip
HEAD
Press <enter> to flip
HEAD
It took you 8 tosses to get 3 heads in a row.
On average you flipped heads 62% of the time

*****************************************************
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*****************************************************

Welcome to coin toss! Get 3 heads in a row to win!

What is your name?          Kirian Aguilera
What is your gender (m/f):  M


Try to get 3 heads in a row. Good luck Mr. Aguilera

Press <enter> to flip
HEAD
Press <enter> to flip
TAIL
Press <enter> to flip
TAIL
Press <enter> to flip
TAIL
Press <enter> to flip
HEAD
Press <enter> to flip
HEAD
Press <enter> to flip
HEAD
It took you 7 tosses to get 3 heads in a row.
On average you flipped heads 57% of the time
```

```cpp
#include "main.hpp"

void heading()
{
   /*****************************************************************************
    * CONSTANTS
    * ---------------------------------------------------------------------------
    * OUTPUT - USED FOR CLASS HEADING
    * ---------------------------------------------------------------------------
    * PROGRAMMER : Programmer's Name
    * CLASS      : Student's Course
    * SECTION    : Class Days and Times
    * LAB_NUM    : Lab Number (specific to this lab)
    * LAB_NAME   : Title of the Lab
    *****************************************************************************/
  const char PROGRAMMER[] = "Carlos Aguilera";
  const char CLASS[]      = "CS1B";
  const char SECTION[]    = "MW: 7:30p - 9:50p";
  const int LAB_NUM       = 1;
  const char LAB_NAME[]   = "";

  // (variable declerations go here)


  /*****************************************************************************
   * OUTPUT - Class Heading
   *****************************************************************************/
  std::cout << std::left;
  std::cout << "*************************************************\n";
  std::cout << "*   PROGRAMMED BY : " << PROGRAMMER << std::endl;
  std::cout << "*   " << std::setw(14) <<"CLASS" << ": " << CLASS <<
std::endl;
  std::cout << "*   " << std::setw(14) <<"SECTION" << ": " << SECTION <<
std::endl;
  std::cout << "*   LAB #" << std::setw(9) << LAB_NUM << ": " << LAB_NAME <<
std::endl;
  std::cout << "*************************************************\n\n";
  std::cout << std::right;
}
```

```
#pragma once
#include <iostream>
#include <iomanip>

void heading(); //Displays heading to console
void userInformation(); //Handles user data ex. name, and sex
bool coinFlip(); //Returns true or false depending on whether it generates a 0 or 1
size_t averageLogic(const size_t &totalHeadCount, const size_t &totalFlipCount);//Returns average head flip per total flip count in percentage
void outputResults(const size_t &totalFlipCount, size_t averageHeadFlip); //Displays results of the program
```

```cpp
/*****************************************************************************
 * AUTHOR      : Carlos Aguilera
 * STUDENT ID  : 1152562
 * LAB #2      : Coin Flip
 * CLASS       : CS1B
 * SECTION     : M-W
 * DUE DATE    : 02.02.22
 *****************************************************************************/
#include "main.hpp"
/*****************************************************************************
 * Title: Coin Flip
 * ---------------------------------------------------------------------------
 * This program will output the class heading
 * ---------------------------------------------------------------------------
 * INPUT:
 *  char flipInitializer {}; //IN       -Input of the \n
 * OUTPUT:
 *  size_t flipCount {0}; //CALC & OUT  -Total flip count
 *****************************************************************************/
int main()
{
    heading();

    std::cout << "Welcome to coin toss! Get 3 heads in a row to win!\n\n";
    userInformation();

    size_t currentHeadCount {0}; //CALC -Increase by one if heads is flipped, resets to 0 if tails is flipped
    size_t totalHeadCount {0}; //CALC   -Total head count for the run of the program
    size_t flipCount {0}; //CALC & OUT  -Total flip count
    char flipInitializer {}; //IN       -Input of the \n

    while (currentHeadCount != 3)//while currentHeadCount is not equal to 3 keep looping
    {
        std::cout << "Press <enter> to flip";
        std::cin.get(flipInitializer);

        if(flipInitializer == '\n')//if flipInitializer has \n stored the true
        {
            if(coinFlip()) {//if function coin flip returns true then run
                std::cout << "HEAD\n";
                ++currentHeadCount;
                ++totalHeadCount;
            }else {//else run
                std::cout << "TAIL\n";
                currentHeadCount = 0;//reset currentHeadCount to 0;
            }
            ++flipCount;
        }else {//else reset buffer and flip again
            std::cin.ignore(10,'\n');
        }
    }
    outputResults(flipCount, averageLogic(totalHeadCount, flipCount));
    return 0;
}
```

```cpp
#include "main.hpp"
#include <string>

void userInformation()
{
    std::string userName {};//IN -Name of user
    char userGender {};//IN      -Gender of user

    std::cout << std::left;
    std::cout << std::setw(28) << "What is your name?";
    std::getline(std::cin, userName);//gets entire line then resets buffer
    userName = userName.substr(userName.find(' ') + 1,
userName.size());//calls method substr for userName starts at character ' '
and ends at the end of the string

    std::cout << std::setw(28) << "What is your gender (m/f):";
    std::cin.get(userGender);
    std::cin.ignore(100,'\n');//buffer reset always after .get is used

    std::cout << "\n\nTry to get 3 heads in a row. Good luck ";
    if(userGender == 'm' || userGender == 'M')//if userGender stores 'm' or
'M' then true
        std::cout << "Mr. " << userName << "\n\n";
    else if(userGender == 'f' || userGender == 'F')//else if userGender stores
'f' or 'F' then true
        std::cout << "Ms. " << userName << "\n\n";
    else //else run
        std::cout << userName << "\n\n";
    std::cout << std::right;
}
```

```cpp
#include "stdlib.h"
#include "time.h"

bool coinFlip()
{
    srand(time(NULL));//sets seed to time function gets called
    return static_cast<bool>(rand() % 2);//returns 0 or 1 and gets casted to a bool
}
```

```cpp
#include "main.hpp"

size_t averageLogic(const size_t &totalHeadCount, const size_t &totalFlipCount)
{
    /*
        size_t totalHeadCount; CALC -Gets divided by totalFlipCount
        size_t totalFlipCount; CALC -Divides totalHeadCount and the result gets multiplied
    */
    return double(totalHeadCount)/totalFlipCount * 100; // returns a type size_t variable
}
```

```cpp
#include "main.hpp"

void outputResults(const size_t &totalFlipCount, size_t averageHeadFlip)
{
    /*
        const size_t &totalFlipCount; OUT -total flip count
        size_t averageHeadFlip; OUT -average head flip per total flips in percentage
    */

    std::cout << "It took you " << totalFlipCount << " tosses to get 3 heads in a row.\n";
    std::cout << "On average you flipped heads " << averageHeadFlip << "% "<< "of the time\n";
}
```