1. What is the output produced by the following program segment? Don't just run it — trace through it and figure it out by hand (which is a skill you'll need for the exams).

string grendel = "endl";

cout << "endl";

cout << grendel;

cout << endl;

cout << "grendel";

Output:

endlendl

grendel

1. Consider the following program:

#include <iostream>

using namespace std;

int main()

{

int side;

cout << "Enter a number: ";

cin >> side;

for (int i = 0; i < side; i++)

{

for (int j = i; j >= 0; j--)

{

cout << "#";

}

cout << "\n";

}

}

Example output:

Enter a number: 3  
#

##

###

It prints a stair with the inputted number of steps.

1. Copy the program in problem 2 and change it so that for any input number, the changed program produces *exactly* the same output as the original, but the changed program uses a while loop instead of a for loop for the inner loop.

#include <iostream>

using namespace std;

int main()

{

int side;

cout << "Enter a number: ";

cin >> side;

for (int i = 0; i < side; i++)

{

int j = i;

while (j >= 0)

{

cout << "#";

j--;

}

cout << "\n";

}

}

1. Copy the program you wrote for problem 3 and change it so that for any input number, the changed program produces *exactly* the same output as the original, but uses a do-while loop instead of a for loop for the outer loop. Be careful! (Hint: How does it behave if side is not positive?) You may need to add a little additional code to make sure the program behaves identically to the program in problem 3.

#include <iostream>

using namespace std;

int main(){

int side;

cout << "Enter a number: ";

cin >> side;

int i = 0;

if (side >0) {

do{

int j = i;

while (j >= 0)

{

cout << "#";

j--;

}

cout << "\n";

i++;

} while (i < side);

}

}

1. Assume codeSection has been previously declared as an int and given as its value the number of a section of the [California Penal Code](https://leginfo.legislature.ca.gov/faces/codesTOCSelected.xhtml?tocCode=PEN). Write a switch statement that for any value of codeSection, produces exactly the same output as the following if statement.

switch (codeSection) {

case 281:

cout << "bigamy";

break;

case 321:

case 322:

cout << "selling illegal lottery tickets";

break;

case 383:

cout << "selling rancid butter";

break;

case 598:

cout << "injuring a bird in a public cemetery";

break;

default:

cout << "some other crime";

}