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";

}

}

In a brief, simple English sentence, state what this program does (e.g. "It prints a circle.", not "First it does blah blah blah, then it yada yada yada, then ..."). Again, figure this out by hand.

This program prints out a right triangle.

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;

int i = 0;

while (i < side)

{

int j = i;

while (j >= 0)

{

cout << “#”;

j--;

}

cout << “\n”;

i++;

}

}

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.  
    if (codeSection == 281)

cout << "bigamy";

else if (codeSection == 321 || codeSection == 322)

cout << "selling illegal lottery tickets";

else if (codeSection == 383)

cout << "selling rancid butter";

else if (codeSection == 598)

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

else

cout << "some other crime";

see next page

switch(codeSection)   
 {  
 case 281:  
 cout << "bigamy";   
 break;  
 case 321:  
 cout << "selling illegal lottery tickets";  
 break;  
 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";   
 }