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";  
  
**The first cout prints out a string containing “endl”. The next cout outputs the variable Grendel, which is the string containing “endl”. The next cout moves the cursor to the next line. The last cout prints out a string containing “grendel”. The final product would be:**

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 picture of a skyscraper."). Again, figure this out by hand.

**This program prints “#” on each line, though the number of “#” printed starts at 1 and increments by one on the next line until there is a ‘side’ number of #.**

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, it produces *exactly* the same output, 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);

}

return 1;

}

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. 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 << "wounding a bird in a public cemetery";

else

cout << "some other crime";  
  
  
**switch (281)**

**{**

**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 << “wounding a bird in a public cemetery”;**

**break;**

**default:**

**cout << “some other crime”;**

**return 1;**

**}**