EXAM 1

FIRSTNAME: LASTNAME: DATE:

1. (10 pts) Mark the following statements as True or False

a) A binary code is a sequence of 0s and 1s.

b) The program that loads first when you turn on your computer is called the operating system.

c) A sequence of 8 bits is called a byte.

d) A compiler translates the source code into an object program.

e) A component system has only one component: hardware.

2. (15 pts) What is the output of the following C++ code?

```
int x = 9/7;
int y = 12;
if(x+y>17 || y -x <20){
    y = x – y;
   x = y + x;
    cout <<  x << " " << y << "\n" << x + y << " " << y – x << endl;
} else {
     x = y – x + y%5;
     cout <<< x << " " << y << "\n" << x -y << " " << x +  y << endl;
}
```

3. (15 pts) What is the output of the following program segment?

```
int num=0, y=0;
for(int count=1; count <=4; ++count){
          y = y + count;
          num = num*count + y;
}
cout << num << " " << y << endl;
```

4. (20 pts) Write a C++ program that does the following:

a) open the file numbers.txt.

b) find the maximum of the numbers of the first column.

c) find the minimum of the numbers of the third column.

d) find the sum of all the positive numbers of the second column that are divisible by 10.

5. (15 pts) Write a for loop that generates the following sequence:

1 3 9 27 … 59049.

6. (10 pts) Write a C++ code that prompts the user to enter three numbers. The program should then output the maximum of the numbers.

7. (15 pts) Rewrite the following code using if else statements.

```
char grade;
switch (grade)
{
case 'A':  cout << "The grade point is 4.0.";
           break;
case 'B': cout << "The grade point is 3.0.";
          break;
case 'C': cout << "The grade point is 2.0.";
          break;
default:  cout << "The grade is invalid.";
}
```

(20 pts) EXTRA CREDIT

You are given an integer n. Check if n has an odd divisor greater than one (does there exist such a number (x > 1) that n is divisible by x and x is odd).

For example, if n=6, there is x=3. If n=4, then such a number does not exist.

Input

One integer n.

Output

Output

. “YES” if n has an odd divisor, greater than one;

. “NO” otherwise.

numbers.txt

```
     63  -17    -68
    -79  21     -79
    -51  66     -12
    -69 -66     73
    3    34     86
    -3   -66    33
    4    55     -97
    -82  -11    -87
    -57  -33    95
    -66  -36    76
    -100  84    -59
    70   -90    -35
    -27  86     -85
    -94  37     98
```

```
-51  -63    88
31   -1     -92
```