Q1: Write down the output of the following program:

```cpp
#include <iostream>
using namespace std;

double bol(double x, double y=1){
    return (x+y)/y;
}

int main(){
    int x[5] = {3, 4, 0, 1, 2};
    int p, q;
    for(int k=0; k<5; k++){
        p = int( bol(x[k],2) );
        q = int( bol(p)  );
        cout << p << " " << q << " " << x[x[q]] << endl;
    }
}
```

Q2: Assume that address of the first element of the array `x` is `0x22ff50`, and size of `int` is 4 byte. Write down the output of the program.

```cpp
#include <iostream>
using namespace std;

int main(){
    const int n = 4;
    int x[n] = {53,24,91,58};
    int y = n;
    int* g = &x[0];
    int& r = y;
    for(int i = n-1; i >= 0; i--){
        std::cout << x[i] << " " << &x[i] << " " << g << " " << r++ << std::endl;
    }
}
```
Q3: Write a C++ function named

```cpp
    double KE(double m, double v)
```

that takes the values of mass m and velocity v of an object and returns the kinetic energy of the object. Use the function in a main program.
Q4: Write a C++ function named

   double norm(vector<double> a)

that returns the norm (magnitude) of a vector
a = (a₁, a₂, ..., aₙ). Use the function in a main
program. Note that the norm is defined as:

   \|a\| = \sqrt{a₁² + a₂² + \cdots + aₙ²}
Q5: Write a function named

\[ \text{int } F(\text{int } n, \text{int } k); \]

to return the result of the following calculation: Use this function in a main program.

\[ \prod_{m=1}^{k} \frac{n-k+m}{m} \]
Q6: A file called speed.txt contains 9 time (h) vs speed (km/h) measurements of a car. Write a program to read data into arrays and output the average velocity to the screen.

<table>
<thead>
<tr>
<th>Time</th>
<th>Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25</td>
</tr>
<tr>
<td>2</td>
<td>23</td>
</tr>
<tr>
<td>3</td>
<td>24</td>
</tr>
<tr>
<td>4</td>
<td>28</td>
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<td>5</td>
<td>27</td>
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<td>6</td>
<td>26</td>
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<td>7</td>
<td>20</td>
</tr>
<tr>
<td>8</td>
<td>22</td>
</tr>
<tr>
<td>9</td>
<td>24</td>
</tr>
</tbody>
</table>
Q7: Write a program to read an integer n and output the proper divisors of the integer n to a file called proper.txt.