```
#include <iostream>
#include<stdio.h>
#include<conio.h>
using namespace std;
char run = 'q';
int a[4][4] = { {0,0,0,0},{0,0,0,0},{0,0,0,0},{0,0,0,0} };
void grid()
{
	cout << "-----------------------------------------------------------------" << endl;
	for (int i = 0; i < 4; i++)
	{
		for (int j = 0; j < 4; j++)
		{
			if (a[i][j] > 0)
			{
				cout << "|	" << a[i][j] << "	";
			}
			else
			{
				cout<< "|		";
			}

		}
		cout << "|" << endl;
		cout << "-----------------------------------------------------------------" << endl;

	}
}
//*******************************NEW RANDOM NUMBER FORMATION AT EVERY
MOVE******************//
void newR()
{
	int p;
	int q;
	while (1)
	{
		p = rand() % 4;
		q = rand() % 4;
		if (a[p][q] == 0)
		{
			a[p][q] = rand() % 2 + 1;
			break;
		}
```

```
	}

}
//**********************MAIN GRID WITH TWO RANDOM NUMBERS*****************************//
void display()
{
	int k = rand() % 4;
	int l = rand() % 4;
	int m = rand() % 4;
	int n = rand() % 4;
	cout << "Here is the 1024 game";
	cout << endl << "INSTRUCTION : "<<endl;
	cout << "1. Use arrow keys for movement " << endl;
	cout << "2. Press q anytime to quit the game";
	cout << endl;
	cout << "-----------------------------------------------------------------" << endl;
	a[k][l] = rand() % 2 + 1;
	if (k != m && l != n)
	{
		a[m][n] = rand() % 2 + 1;
	}
		for (int i = 0; i < 4; i++)
		{
			for (int j = 0; j < 4; j++)
			{
				if (a[i][j] != 1 && a[i][j] != 2)
				{
					cout<<"|              ";
				}
				else
				{
					cout << "|       " << a[i][j]<<"      ";
				}
			}
			cout << "|" << endl;
			cout << "-----------------------------------------------------------------" << endl;
		}
}
/************************ selection of buttons ***********************/
//**********************LEFT KEY PRESSED****************//
void left()
{
	newR();
```

```
	grid();
}
//**********************RIGHT KEY PRESSED****************//
void right()
{
	newR();

	grid();
}
//**********************UP KEY PRESSED****************//
void addup()
{
	for (int j = 0; j < 3; j++)
	{
		for (int i=3; i >= 0; i--)
		{
			int k = j;
			int l = i - 1;
			if (a[l][k] == a[i][j])
			{
				a[l][k] *= 2;
				a[i][j] = 0;
			}
			else if(a[l-1][k]==0)
			{
				a[l - 1][k] = a[l][k];
				a[l][k] = a[i][j];
			}
		}
	}
}
void up()
{
	newR();
	for (int j = 0; j < 3; j++)
	{
		for (int i = 3; i >= 0; i--)
		{
			if (a[i][j] == 0)
			{
				for(int count=0;count<i;count++)
			   {
					if (a[i - 1][j] != 0) // if no element above the specific index is
not zero
```

```
                                        {
                                                if (a[i - 1][j] != a[i - 2][j])//if no any element above are
equal
                                                {
                                                        a[i][j] = 0;
                                                }
                                                else
                                                {
                                                        a[i - 2][j] *= 2;
                                                        a[i - 1][j] = 0;
                                                }
                                        }
                                }
                        }
                        else
                        {
                                addup();
                        }
                }
        }
        grid();
}
//**********************DOWN KEY PRESSED***************//

void down()
{
        newR();

        grid();

}
//*****************************SELECT ANY ARROW KEY TO MOVE*******************************//
void button()
{
        int b;
        int getch(void);
        while (1)
        {
                b = _getch();
                if (b == 75)
                {
                        left();
                }
                else if (b == 80)
```

```
		{
			down();
		}
		else if (b == 77)
		{
			right();
		}
		else if (b == 72)
		{
			up();
		}
		else if(b==113)
		{
			break;
		}
	}
}
//*****************************WIN FUNCTION*************************//
void win()
{
	for (int i = 0; i < 4; i++)
	{
		for (int j = 0; j < 4; j++)
		{
			if (a[i][j] == 1024)
			{
				cout << "YOU WON !";
			}
		}
	}
}
int main()
{
	display();
	button();
	win();
	system("pause");
}
```