

## Question 1

```
void square(int & var) {
    var = var*var;
}

int main()
{
    int a = 2;
    for(int i=1; i<=5; i++) {
        cout << "a = " << a << endl;
        square(a);
    }
    return 0;
}
```

## Question 2

```
int countEvens(int* values, int nb_of_values) {
    int nb_even = 0;
    for(int i=0; i<nb_of_values; i++) {
        if(!(values[i]%2)) {
            nb_even++;
        }
    }
    return nb_even;
}

int main()
{
    int array1[] = {2, 1, 2, 3, 4}; // 3 even numbers
    int array2[] = {2, 2, 0}; // 3 evens numbers
    int array3[] = {1, 3, 5}; // 0 even numbers
    cout << "array1 has " << countEvens(array1, 5) << " even numbers" << endl;
    cout << "array2 has " << countEvens(array2, 3) << " even numbers" << endl;
    cout << "array3 has " << countEvens(array3, 3) << " even numbers" << endl;
    return 0;
}
```

## Question 3

```
bool sum28(int values[], int nb_of_values) {
    int two_sum = 0;
    for(int i=0; i<nb_of_values; i++) {
        if(values[i] == 2)
            two_sum+=2;
    }
    return (two_sum == 8);
}

int main()
{
    int array1[] = {2, 3, 2, 2, 4, 2};
    int array2[] = {2, 3, 2, 2, 4, 2, 2};
    int array3[] = {1, 2, 3, 4};
    cout << "Has array1 4 'two' ? " << sum28(array1, 6) << endl;
    cout << "Has array2 4 'two' ? " << sum28(array2, 7) << endl;
    cout << "Has array3 4 'two' ? " << sum28(array3, 4) << endl;
    return 0;
}
```



```

int main()
{
    Student* jack = new Student("jack", 1234, "EE2", male);
    Student* jayz = new Student("jayz", 1234, "TEST");
    Student* john = new Student("john", 1234);
    jack->display();
    jayz->display();
    john->display();
}

```

## Question 7

```

class Undergraduate : public Student {
private:
    string courses[10];
};

```

## Question 8

```

void display() {
    Student::display();
    cout << "This student is studying :";
    for(int i=0; i<10; i++) {
        cout << " " << modules[i];
    }
    cout << endl;
}

```

## Question 9

```

virtual ~Student() {
    cout << "Student " << name << " destroyed." << endl;
}

```

## Question 10

```

int main(int argc, char *argv[])
{
    Undergraduate* john= new Undergraduate();
    Student* jack = new Student();
    jack->display();
    jack = john;
    jack->display();

    return 0;
}

```

This code displays the undergraduate student as a normal student and doesn't show its modules. It is because the display() method is not virtual.