**Ministry of education and science of the Kyrgyz Republic**

**Kyrgyz State Technical University named after I.Razzakov**

**Faculty of Information Technologies**

**Department of Software of Computer Systems**

**Major: 710400 «Software Engineering»**

Report

Discipline: «**Object-Oriented Design**»

Software requirements

Done by**:** student of the SE(eng)- 1- 21

Shumkarbekov Sultan  
Checked by: Musabaev E.B.

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**Functional requirements**

**Task1:**

**Functional requirements:**

1. The program should allow the user to input the probability of hitting the target (in the range from 0 to 1).
2. The program should allow the user to input the number of shots to be fired.
3. The program should generate random numbers to simulate each shot.
4. The program should print the value of RAND\_MAX before generating random numbers.
5. For each shot, the program should print the random number generated and whether the shot hit the target based on the probability input by the user.
6. The program should return 1 if the target is hit at least once, and 0 otherwise.
7. The program should calculate and print the estimated probability of hitting the target after the given number of shots.
8. The program should use the std::pow function from the <cmath> library to calculate the estimated probability.
9. The program should handle invalid input for the probability and number of shots (e.g., non-numeric input, input outside the valid range).
10. The program should display appropriate error messages for invalid input.
11. The program should be able to run multiple times, allowing the user to input new values for the probability and number of shots for each run.

**Nonfunctional requirements**

1. Response Time: The program should quickly calculate results,
2. Availability-is the system available only when connected to the internet or does it also work offline
3. Usability-The interface must be simple and understandable
4. OS Windows 7 and higher
5. Processor intel core i5 and higher

**Answers to questions:**

1. What is a static class field? How is it used by class objects? A static class field is a field that is associated with the class itself, rather than with any particular instance of the class. It is shared among all instances of the class. Objects of the class can access the static field to read or modify its value, but the field is not duplicated for each object.
2. What is the difference between a static class field and a static variable? A static class field is a field that belongs to the class itself, while a static variable is a variable declared outside of any class or function and is accessible only within the file where it is declared. Static class fields are accessed using the class name, while static variables are accessed using their name within the file where they are declared.
3. What is the difference between a static class field and a regular (non-static) class field? A static class field is associated with the class itself and is shared among all instances of the class, while a regular class field is associated with each instance of the class and has a separate value for each instance.
4. How is the definition of a static field different from that of a regular field? A static field is defined using the static keyword before the field type in the class definition, while a regular field is defined without the static keyword. Static fields are also initialized outside of any method, typically at the point of declaration or in a static initializer block.
5. What are static methods of a class used for? Static methods of a class are used to perform operations that are not specific to any instance of the class. They can be called using the class name, without the need to create an instance of the class. Static methods are often used for utility functions or for operations that do not require access to instance-specific data.
6. What are const methods? What are they used for? Constant methods are methods of a class that are declared with the const keyword at the end of the method signature. They are used to indicate that the method does not modify the state of the object on which it is called. Const methods can be called on const objects and are useful for ensuring that certain operations do not change the object's state.