Question 1: What are the assumptions for the traditional random testing?

For traditional random testing assume that the **probability** of failure for different inputs across the entire input domain is **same (Equal or uniformly distributed)**. Hence we randomly choose input values for testing.

Question 2: What is the rationale behind adaptive random testing?

In traditional random testing we choose inputs purely on a random basis. This does not ensure that we cover the entire input domain. We might get inputs which are very **near** to each other in the input domain. The rationale behind adaptive random testing is to counter this problem by choosing Inputs adaptively based on already used inputs. This ensures that we choose inputs statistically **far away** from each other and try to cover entire input domain, so that we have a greater probability of finding failure causing inputs.

Question 3: What are the challenges when using adaptive random testing to handle high-dimensional complex input data?

For adaptive random testing we need to find input values that are evenly spread across the input domain find these input values we need to find distance between two input values. For high dimensional complex input data it is difficult to denote the input quantitatively. Determining a good **distance** measure (formulating a notion of distance) is another challenge for high dimensional input data.