What is Heuristic Evaluation and How to do it?

Basic Introduction -
This is a set of usability rules and guidelines which were defined by Jakob Nielsen in 1990's. These are the best practices which are used to evaluate the user interface design.

Rule of thumb -

1. **Visibility of system status** : Every time there should be a constant connection between user and system. They should not guess and remember anything that they are doing. The visual feedback has to be there. To recognize a click, this allows the user to control the system. Too much information is a distraction.

2. **Match between the system and real world**:
   1. Speaks the user's language.
   2. Should follow real world conventions

3. **User Control & Freedom**: Users often choose a function by mistake and need a clearly marked emergency exit to leave that space. This requires Undo and Redo. Every system should enable a way for users to get out of a situation. And browser buttons should not be the only reason to do so. There must be a way within the app itself to do it.

4. **Consistency and Standards**: This information is crucial that your UI is predictable and learnable:
   1. **Internal Consistency**: Means to maintain consistency internally within a product .
   2. **External Consistency**: Means to maintain consistency outside the products.This is based on Jakob's Law: "People spend most of their time on sites other than yours". While breaking this will increase cognitive load on your users.

5. **Error Prevention**: Look at the design and check for sections which can cause severe damage to your ui. Another option is to have a dialog prevention method. Having an undo button is also really helpful. Take time to search for these errors.

6. **Recognition vs. Recall in User Interfaces** : Why is recall easier than recognition? Recall involves fewer cues than recognition.

7. **Flexibility and efficiency of Use**: Flexible processes can be processed in different ways, so that users can pick what method really fits for them.

8. **Aesthetic and Minimalist Design**: It does not mean you should use a monochromatic approach in your color pallet. It is to keep the content in the visual design of your UI focused on the centrals. This is closely related to the Human Computer Interaction concept of signal to noise ratio. The signal-to-noise ratio represents the ratio of relevant to irrelevant information in a user interface. Always aim for a high signal-to-noise ratio. It is important to prioritize your content and features.

9. **Help Users Recognize, Diagnose and Recover from Errors**: 3 recommendations to do this -
     1. Inform users when an error has occurred
     2. Tell users what went wrong
     3. Offer solutions to user to fix the errors

10. **Help and Documentation**: App onboarding pages, walkthroughs, tooltips, popovers, videos, chatbots and web chats. While implementing this use the following recommendation -
     1. Is it easy to search help documentation
     2. Focused on the user's task
     3. List concrete steps to be carried out

When to Conduct Heuristic Evaluation
It can be performed at any stage during the design process and after being the product has been developed too.

Who to Conduct Heuristic Evaluation
The evaluators must be UX experts. The evaluation must include only 3-5 evaluators. Including more will make a repetition of the usability problems.

How to Conduct Heuristic Evaluation

1. **Establish an appropriate list of Heuristics** - Use Nielsen **10 heuristics** as stepping stones. Make sure to combine them with other relevant design guidelines and market research.

2. **Select your Evaluators** - Make sure you carefully choose your evaluators. Your evaluators should not be your end users. They should typically be usability experts and preferably with domain expertise in the industry type that your product is in.

3. **Brief your evaluators** - Inform your evaluators clearly about the evaluation. There should be a standardized format to ensure the evaluators receive the same instruction in order to avoid any biased evaluation. Make sure you inform them about which tasks they will cover on the basis of their expertise.

4. **First Evaluation phase** - The first evaluation is a process of 2 hours, depending upon the nature and complexity of the product. The evaluators will use the product freely and they will identify the items to be evaluated.

5. **Second Evaluation phase** - In the second evaluation phase, the evaluators will carry out another run-through to re-check the aimed items in the first phase.

6. **Record the usability problems** - The usability issues can be recorded using Severity method (defined by Nielsen)

Severity

Severity ratings can be used to allocate the most resources to fix the most serious problems and can also provide a rough estimate of the need for additional usability Efforts. If the severity ratings indicate that several disastrous usability problems remain in an interface, it will probably be inadvisable to release it.

The Severity of usability problems is a combination of 3 factors -

1. **Frequency** - the frequency with which the problem occurs: Is it common or rare?
2. **Impact**: the impact of the problem if it occurs: Will it be easy or difficult for the users to overcome?
3. **Persistence**: the persistence of the problem: Is it a one-time problem that users can overcome once they know about it or will users repeatedly be bothered by the problem?

The Following 0 to 4 rating scale can be used to rate the severity of usability problems-

1. **0** = I don't agree that this is a usability problem at all
2. **1** = Cosmetic problem only: need not be fixed unless extra time is available on project
3. **2** = Minor usability problem: fixing this should be given low priority
4. **3** = Major usability problem: important to fix, so should be given high priority
5. **4** = Usability catastrophe: imperative to fix this before product can be released

In Heuristic Review, it is better to collate all the issues and ask for Severity later from the evaluators.

Analyze the evaluation results

Prioritize the severity. Remember to talk with the evaluators about their recommended solutions. Arrange the meeting with the Project Manager and list out your findings and split into different iteration stages.

Reference -

1. https://uxplanet.org/how-to-conduct-heuristic-evaluation-85548a355dca
2. https://www.interaction-design.org/literature/article/heuristic-evaluation-how-to-conduct-a-heuristic-evaluation
3. https://www.nngroup.com/articles/how-to-rate-the-severity-of-usability-problems/
4. https://getuplift.co/heuristic-analysis-guide/
5. https://uxdesign.cc/heuristic-analysis-in-the-design-process-usability-inspection-methods-d200768eb38d
6. https://www.toptal.com/designers/usability-testing/usability-analysis-how-to-run-a-heuristic-evaluation
7. https://adamfard.com/blog/heuristic-evaluation