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# Test/Inspection Report

## Project Information

### URL

Official Project Repo: https://github.com/audacity/audacity

Personal Repo: https://github.com/kasowskc/audacity_heuristic_eval

### License

Audacity is released as open source software under the GPL Version 2 License.

### Description

Audacity is an open source audio editor and recorder software for the Windows, Mac, and Linux operating systems. It is a highly customizable program that allows the user to record audio from any physical microphone or any virtual source such as other programs. Audacity also includes editing software features to mix audio tracks and 32-bit float audio processing. Custom scripting can be done in either Python, Perl, or its custom language Nyquist. This program is intended for reasonably experienced audio users who wish to have more control over what they record or listen to. Because of its large number of features and accessibility to customization options, this program is not intended to be used by those who are not at least somewhat familiar with the audio recording and editing process.

## Summary of Work Product

The testing method I will employ is Usability testing. This involves testing the user experience during general use of the software, and includes the ease of use, time taken, and possible mistakes by varying users. Specifically, I will implement Heuristic evaluation based on Jakob Nielsen's 10 Usability Heuristics; in order to better categorize how Audacity meets common benchmarks for user experiences. I chose to do Heuristic testing because I believe that Audacity could feature a better user experience in general and that it is not generally an easy experience for those who are not experienced with the program. I believe that users new to the program are likely to make a number of mistakes in its general use and that there are a few usability issues that could be improved. To present my findings, I have produced a text report with included screenshots. These screenshots will include the possible heuristic violations,

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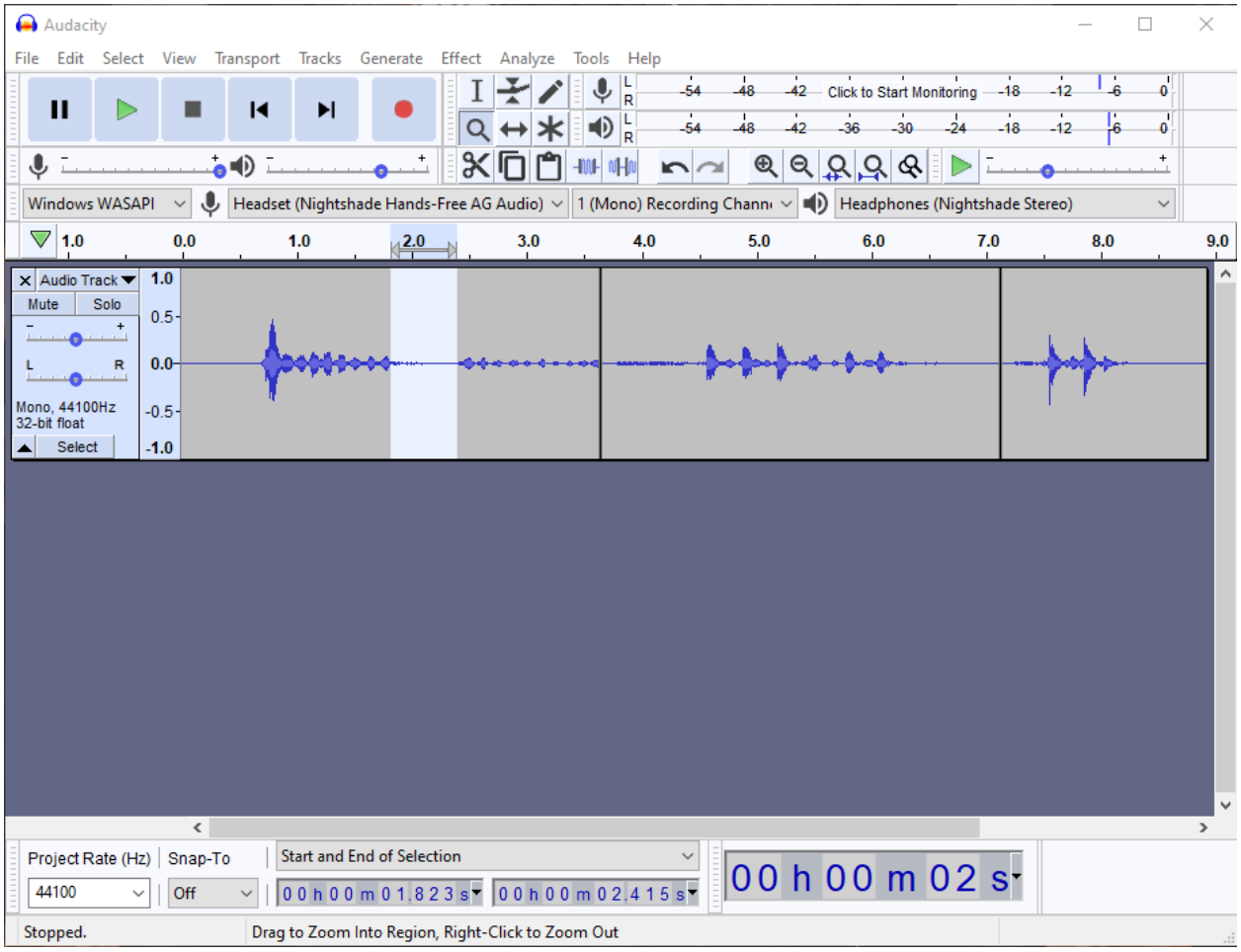
and the text will provide more detail about what specifically violated the heuristic and what improvements I believe could be made. Following are the most significant heuristic violations In the Audacity program that would most likely impact the user experience, along with a grade out of ten for each heuristic.

Included below is a screenshot of the main screen for the Audacity program. This is for reference so that the following screenshots may be better interpreted.



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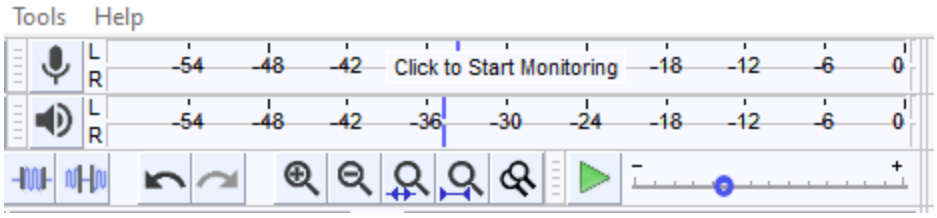
**Heuristic #1 - Visibility of System Status (6/10)**

*"The design should always keep users informed about what is going on, through appropriate feedback within a reasonable amount of time." - Jacob Nielsen.*

It's important that the user understands the results of their actions within the application. Audacity runs into many usability issues in this regard because there are many actions the user can take that have no clear output or effect.

For example, the application includes a "recording tool meter" on the right of the main screen. Shown in the screenshot below, it displays a visual representation of the input received in decibels from the selected microphone.




As shown, the user may click to begin monitoring their audio input. This can also be achieved by clicking the large "Record" button on the main screen. However, if the user clicks on the tool meter, the application only shows the audio levels of the input but does not record the audio. There is no indication of this in the application itself. This is especially confusing considering the bar above is called the "Recording tool meter" in the official Audacity manual. Further, as shown in the screenshot above, the application displays "Click to start Monitoring" to start the recording tool. Once begun, there is no likewise prompt shown for how to end the audio monitoring.

**Heuristic #2 - Match between System and the Real World (7/10)**

*"The design should speak the user's language. Use words, phrases, and concepts familiar to the user, rather than internal jargon. Follow real world conventions, making information appear in a natural and logical order. - Jacob Nielsen*

Audacity is an open source project and therefore adheres relatively well to common terminology and prompts used in the audio industry. There are no words in the immediate program that are not clear in their purpose from the reference point of audio engineering. However, the same cannot be said for the program's icons.

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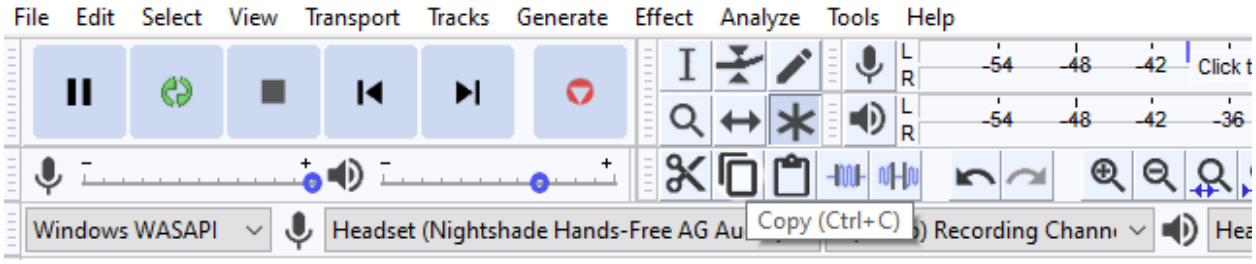
Shown here is the main tool selection interface for the Audacity program. It allows the user to access the majority of the audio editing tools available. However the icons used to represent these tools are not very self explanatory. While the user may hover their mouse over the icon to display the name of the tool, many of these icons are completely indecipherable as to their intended purpose. For instance, the middle icon in the first row is the “Envelope Tool”. The novice user of Audacity would have no idea what that tool does and the iconography used here would provide no help.

**Heuristic #3 - User Control and Freedom (5/10)**

*“Users often perform actions by mistake. They need a clearly marked “emergency exit” to leave the unwanted action without having to go through an extended process.” - Jacob Nielsen*

Because Audacity is a production program, where the end goal is to have produced or modified some form of audio, it's important that the user is able to cancel out any unwanted action. It's highly likely that a user may accidentally impact their audio recording in some unintended way and need to reverse this effect. Regarding the tools in the application, the program begins with no tool selected. However, once the user clicks on a tool to use it, there is no clear method of turning that tool off once used. You cannot click the same button again to turn it off and switching to a different tool is the only method to escape it. After the first use, the user must have a tool selected at all times as there is no way to disable it. This is slightly mitigated by the use of the “Undo” function under the “Edit” tab, however this is only a fix, not a solution to the heuristic issue itself.




**Heuristic #4 - Consistency and Standards (4/10)**

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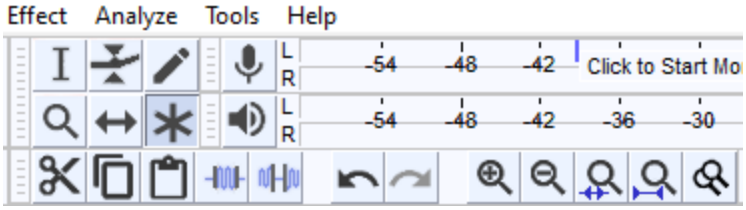
*“Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform and industry standards.” - Jacob Nielsen*

This heuristic is violated by the icons used in the main menu and their inconsistency. There are common icons used across the internet for various meanings that have developed over time. For the average user, it's best if icons for specific functions are similar to those used in other applications. A good example of this in Audacity is the Spyglass icon which represents the “Zoom” function. Audacity breaks the heuristic however when it comes to other functions which have similar icons. This can be seen below.




This breaks the Consistency and Standards heuristic because there are many icons that are similar but different to the standard. On the main menu and in the screenshot above, there are six different variations of the spyglass icon. This is extremely confusing as their purpose is unclear and appears to be redundant in function. Hovering over each icon to display their name does not provide any further explanation.

**Heuristic #5 - Error Prevention (4/10)**

*“Good error messages are important, but the best designs carefully prevent problems from occurring in the first place. Either eliminate error-prone conditions, or check for them and present users with a confirmation option before they commit to the action.” - Jacob Nielsen*

Error prevention is one of the things Audacity lacks the most. There are extremely few error messages that the program will generate, and almost no confirmation messages for any action. This means that new users are very likely to accidentally make a mistake without any indication. As shown in the screenshot below, the default Audacity interface includes a number of unlabeled buttons and tools. The user is able to see their name if hovered over, however there is no description of their functionality within the app.

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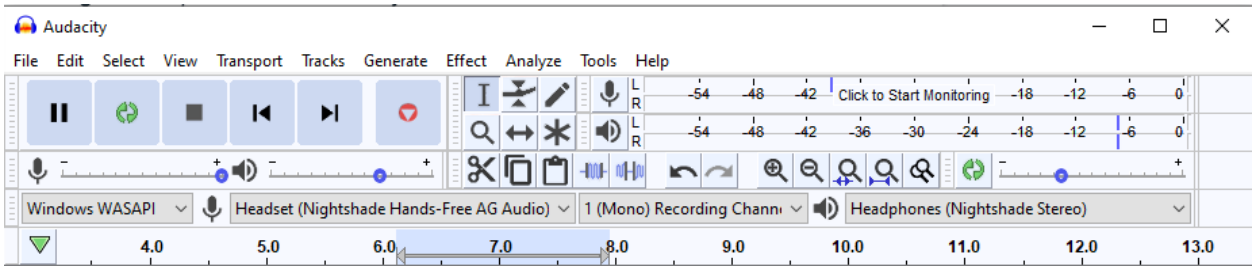


One of the most common errors that users of the Audacity program encounter is simply having the wrong microphone selected as their input device. This selection can be seen in the above screenshot toward the bottom left side. The program does not inform the user if an invalid microphone is selected. The only method to find out if it is correct is to attempt to record audio and it fails to record.

**Heuristic #6 - Recognition rather than Recall (9/10)**

*"Minimize the user's memory load by making elements, actions, and options visible. The user should not have to remember information from one part of the interface to another. Information required to use the design (e.g. field labels or menu items) should be visible or easily retrievable when needed." - Jacob Nielsen*

There are no major heuristic violations in regards to Heuristic #6. This is because 90% of the time, all functionality is done within the main Audacity interface. There is no need for the user to remember any information from screen to screen because the average user will rarely leave the main interface. Additionally, the tab menu at the top of the application provides easy access to the most important functions and is always accessible.

**Heuristic #7 - Flexibility and Efficiency of Use (8/10)**

*"Shortcuts - hidden from novice users - may speed up the interaction for the expert user such that the design can cater to both inexperienced and experienced users. Allow users to tailor frequent actions." - Jacob Nielsen*

This is one heuristic that Audacity excels at. The very basic elements of the user interface use commonly known icons to denote common features in audio editing such as play, pause, etc. This is shown below.

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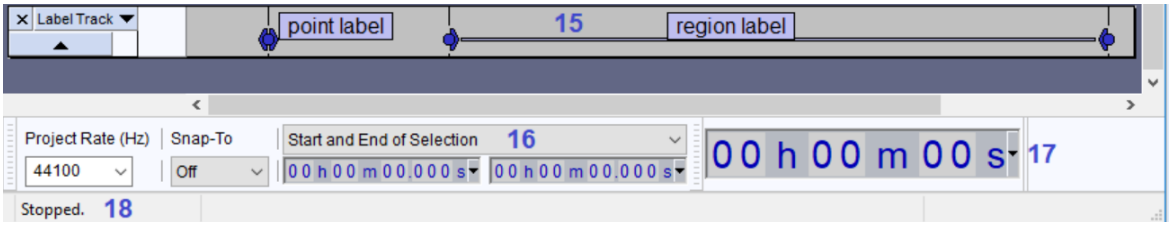
These common icons allow novice users to understand how to operate the program on a very basic level. In terms of efficiency, the program features many complex tools that the experienced user could make use of to better speed up their audio editing experience. This is compounded by the customization possibilities when you incorporate Audacity's own language, Nyquist.

**Heuristic #8 - Aesthetic and Minimalist Design (6/10)**

*"Interfaces should not contain information that is irrelevant or rarely needed. Every extra unit of information in an interface competes with the relevant units of information and diminishes the relative usability." - Jacob Nielsen*

The Audacity program is very minimalistic in its design, sometimes to a fault. There is very little in the user interface that is not required for the basic functionality of the program. This minimalism comes at the cost of aesthetics and the interface can appear cluttered and hard to interpret. While it's efficient, the design isn't focused and it's unclear to new users which parts of the program they should use first. There is redundancy in the design that could be reduced, such as the "Recording Tool Meter" which has its functionality almost entirely eclipsed by the basic record button. Additionally, while the top of the interface is extremely cluttered with many buttons, the bottom is rather empty and shows wasted space.




Much of this portion of the interface could be made more compact and room made for some of the cramped buttons in the upper interface.

**Heuristic #9 - Help users Recognize, Diagnose, and Recover from Errors (2/10)**

*"Error messages should be expressed in plain language (no error codes), precisely indicate the problem, and constructively suggest a solution." - Jacob Nielsen*

This heuristic is blatantly violated by the fact that Audacity operates via error codes rather than error explanations. The only method for finding out what the codes correspond to is by checking the documentation and hoping you find a matching number. Below is an example of an error code produced when attempting to export an incorrect type of sound file.

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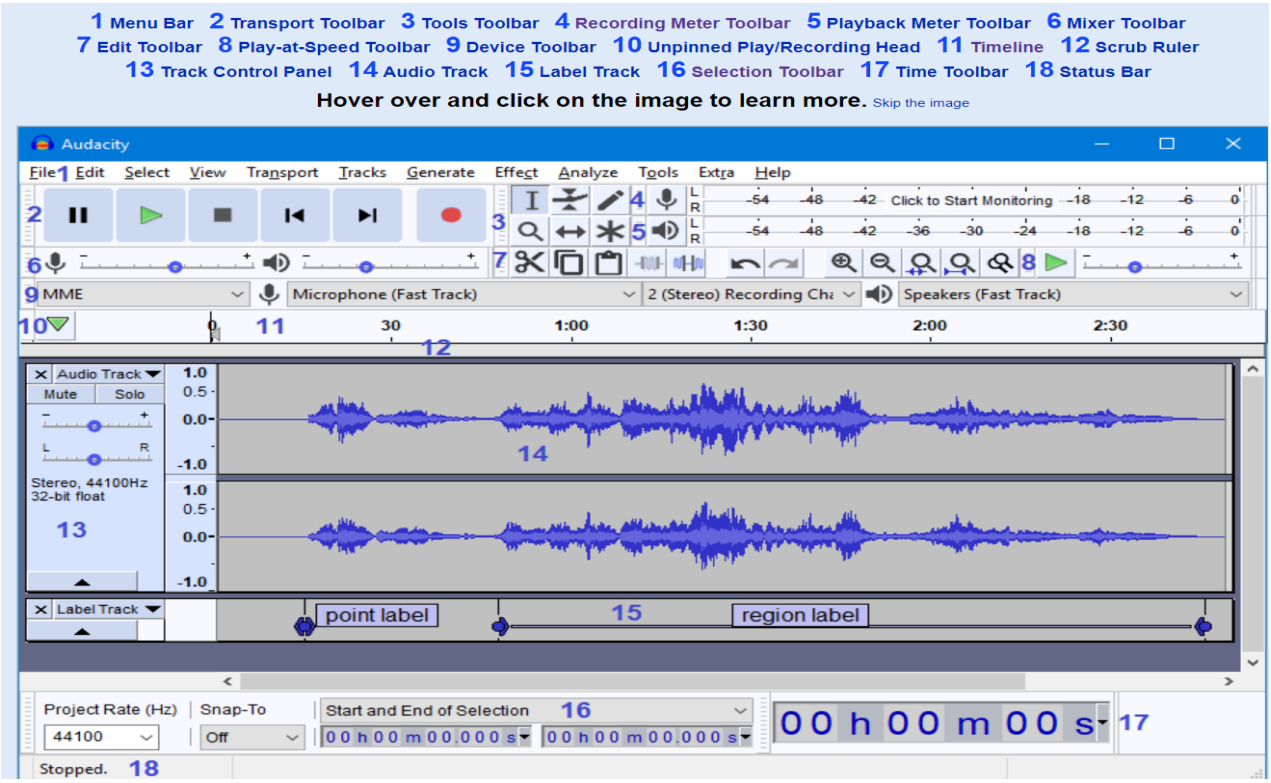
## FFmpeg Error - Can't open audio codec 0x15002

As shown, this error is completely indecipherable by itself and does nothing to help the user solve or understand the issue. This violates the heuristic almost completely in that it does not provide a recognizable response, diagnosis, or help the user recover from the error.

### Heuristic #10 - Help and Documentation (8/10)

*"It's best if the system doesn't need any additional explanation. However, it may be necessary to provide documentation to help users understand how to complete their tasks." - Jacob Nielsen*

Because of its minimalistic design and lack of explanation of features, the Audacity program most definitely requires documentation to use thoroughly. The Audacity Manual is downloaded with the program and can be accessed via the following file path: "C:/Program Files(x86)/audacity/help/manual/index.html". The documentation does a decent job of explaining the features of the program and guiding new users through the use of its basic features. There are some questionable design choices in regards to color use. Specifically in the screenshot below.



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Each of the numbers in the screenshot corresponds to a link that explains that portion of the interface and what its functions are. However, the numbers are rather hard to see because they are the same blue shade as the majority of the interface. This has no impact on the function of the program, however it definitely hinders the user experience.

**Conclusion**

While featuring a very minimalistic design, the open source program Audacity presents many usability issues and heuristic violations. Overall, the program scored a (59/100) for this heuristic evaluation. From the perspective of a new user, Audacity is a complex program that does little to explain its functionality and is hindered further by its use of unconventional icons. There is far too much presented at once and the order of tools does not follow any recognizable pattern. Despite these issues, I believe that the user interface could be redesigned in order to turn Audacity into a competent and user friendly experience.