Bug Bytes Mobile Application
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The following is a rough prototype for how we might design our application. Images were kept small (600 x 450 pixels) as we intend to implement this on a mobile device, where space can be extremely limited. Additionally, the colors were not chosen for any particular reason other than personal preference, and are subject to change.

Transition Diagram
As this application may be needed in an emergency situation, this design focuses on simplicity. Immediately from the main menu, there are only a few options to choose from. For the purposes of our project we will likely limit the functionality to identifying either bugs or snakes, by the visual characteristics of their appearance or bite mark. The other options are a simple “about” page, which can be used to display information about the authors and project, as well as a “Call Emergency Medical Service” button.

The “Call EMS” button is kept in a consistent location on every screen, and is meant to automate the process of the user contacting emergency responders. This is opposed to first exiting the application and then dialing the number, given the mobile device can be used in this manner. This way the user can push this button on any screen and immediately get in touch with 911, which is important since time is always of the essence in an emergency situation. It will be optimized to contact the most appropriate emergency number, given the device’s GPS coordinates if available. It will likely have a pop-up prompt in case it is pushed by accident, which can be a concern with touch screens.

There is a large emphasis on visual cues with this design, as almost every option has some sort of picture icon associated with it. This is to be a common theme with the design, and its purpose is to reduce ambiguity when choosing among options. This will be detailed further in the next slide.
Selection Screen

Immediately after choosing how they want to identify the animal that bit them, the user is brought to the selection screen. For the purpose of this document, the user has chosen to identify a snake. From here, they can pick and choose among different options for several attributes describing the animal. This screen is subdivided into several parts.

The top left and largest panel always contains a multiple choice question about the animal. These questions will vary depending on animal type (the series of questions will differ greatly for a snake than say a spider or wasp), and are used to find the closest matching animals to the one the user is trying to identify. Each option is described in a word or two and is assisted with a visual icon. The icon is meant to limit ambiguity and increase the speed with which the user is able to answer the question. For example, when answering the given question about pattern, the words “banded” and “striped” might be difficult to differentiate from each other without the additional visual cue. Using the icon can reduce cognitive load at a time when the user may be panicking, as there is little need to interpret the meaning of the keyword. The user is also presented with “next” and “previous” buttons to allow easy transition from question to question, in case they want to skip to the next one or revise their previous answer.

The “Best Matches” panel on the right is used to display the closest matching animals based on the questions already answered and the GPS coordinates of the device, which can be used to limit matches by location. An emphasis is on visual recognition here as well, with a clear
graphic of the animal being displayed that can be used to easily identify it. This screen will be scrollable up and down via touch screen control, although a scroll bar may be added if we decide to make this available as a separate web site as well. Clicking on the graphic of an animal at any time will bring up its information page. This list will constantly be updated as the questions are answered, giving the user immediate feedback to their decisions.

The “Call EMS” button has been kept in the same location so that the user never needs to search for this function when they need it. A “home” button has also been added to the bottom left corner, in case the user wants to clear the session and start over with ease. The bottom panel will be described in more detail on the next slide.

After answering the question about the animal’s pattern, the screen immediately transitions to the next question. Notice that the list of matching animals has been updated to show more appropriate results (only banded snakes are shown), and that the bottom panel has also been updated to reflect the previous choice. The bottom panel will always contain all of the user’s answers at any point, including the associated icons. This is meant to reduce short term memory load on the user, as well as add an option to easily remove a chosen attribute at any time. They can simply click on the word or icon, and a prompt will show up asking them if they are sure they want to remove it. An alternative method could be to take them back to the associated question panel on click so that they may adjust their answer.

Some questions may have radio selection answers, such as the previous one about pattern. The question about color, however, can have multiple answers as will be seen on the
next screen. Although it is not implemented in this design, the display should be able to
differentiate from the two so as not to confuse the user.

The benefit of the constantly updating matches list is that the user does not have to
completely answer all of the questions to find the matching animal. As the user continues to
respond to questions, they may stop at any time to browse through the best matches. On the
example screen above, the user has narrowed down the list enough that they can clearly identify
the snake that bit them using the second picture. Although they could go on to answer more
questions, they immediately recognize it by the picture and can go right to the information page
for the “Eastern Coral Snake”.
The information page for the animal appears more like an informative web site than the other screens, which are intentionally simple and brief. It contains a photo of the animal, which can easily be swapped for others via the “next” and “previous” buttons. The photos will contain different pictures of the animal at different zoom levels to help correctly identify it, and possibly labelled photos of the young or other genders in case they differ in appearance. Photos of characteristic bite marks should also be included when available for further clarification.

The first piece of information on the page is the severity of a bite by this creature, as this is the most important thing to know in an emergency situation. The severity is rated (and color coded) based on a low, medium, high scale, since giving it a numerical value can be misleading. This section will also include information on the symptoms associated with a bite by this animal, as well as any immediate field treatment that can be performed while awaiting advanced emergency treatment.

Other than the emergency-associated information, the page will include an informative description of the animal. While this is mostly meant for recreational use before a bite has occurred, it may include facts to help identify the creature based on its habitat, similar looking species, and general behavior. This page for example compares it to the Eastern Milk Snake, a mimicking creature which is non-venomous.
Other information that could be displayed here might include how the creature typically responds to human contact, the existence of an antivenin that can be relayed to EMS responders, or statistics on the occurrence of bites.

Lastly, the “Call EMS” button is still in its consistent location since the user may decide to make this call after reading about the severity. A “back” button is also included to take the user to the previous selection screen, in case they picked the wrong creature or want to compare it to others seen in the best matches panel.