

## **1. General Instructions**

a. Read general instructions to users.

- "Thank you for participating in our study. We now begin with **Phase 2** of our testing. We are testing the effectiveness of a new security system that plays auditory alerts when an internet-based security situation is detected. Testing will occur in **five stages**. During each stage, you will perform multiple tasks while navigating a webpage, and you may encounter security situations as you do so. At the beginning of each stage, you will be read instructions about your tasks for that stage. The last stage is going to be questions about yourself."
- "Please note that we are not testing you; we are testing the sounds. Our goal is to improve the design of the sounds. Accordingly, we need and appreciate your honest feedback. If you have any questions during the study, please ask."
- "Do you have any questions so far?"

b. The order of steps 2, 3, 4 and 5 of this procedure (i.e., the order of the Application domain) along with scenarios (tasks) in each domain should be randomized (Latin square).

### **IMPORTANT NOTE:**

Open a Blank Word Document/Notepad File and ask the participants to use it to note down anything if a task requires them to do so.

Also, make sure to clear browser data including history every time you start with a new participant.

### **3. Testing Scenarios based on Password Field**

- a. Close all previous tabs (if any) and open a new tab in Google Chrome browser.
- b. Read instruction to users:
  - “During this stage of testing you will be navigating YouTube and Gmail. I will give you a series of tasks related to this website. After I read off a task and tell you to begin, you will navigate the website in order to complete that task. The security alert system will be turned on, so you may hear a sound that indicates a security situation. If you hear a security alert during the task, please stop performing the task and inform me that you have heard an alert. I may ask you further questions about the alert and the security situation.”
- c. Present the 3 tasks to users. For each user, the order of the tasks should be randomized. Read the task to the participant and tell them to begin. When they have completed the task, open a new blank tab (closing all others).
  - i. **No-alert task (Task 1):** “Go to YouTube and search for favorite music video.”
    - [correct response: opens a video on YouTube.com]
  - ii. **Task 2:** “Change Account Information”
    - [alert will sound when user clicks on “password field” while logging into gmail to make changes]
  - iii. **Task 3:** “Finding video with maximum no. of views”
    - [alert will sound; when user clicks on “password field” while entering details in order view their playlist]
- d. After the participant completes the two tasks during which alerts sound (tasks ii and iii), ask the participant questions about the alerts. (NOTE: These questions will be the same for all websites.)

#### **If the user hears the alert and states so:**

- **If this is the first time they’ve heard the alert:**

- "What security situation do you think the sound conveyed?"
- "Why do you think the sound represented [insert their answer]?"
- "If I had not told you to stop after hearing an alert, what actions would you have taken in response to the sound?"
- **If this is the second time they've hear the alert:**
  - "If I had not told you to stop after hearing an alert, what actions would you have taken in response to the sound?"

**If the user keeps performing the task after an alert has sounded,** wait until they finish the task. Then ask if they had detected the alert:

- "An alert played during the task. Did you hear an alert?"
- **If they did:**
  - "Why did you continue after you heard the alert?"
  - "What security situation do you think the sound conveyed?"
  - "Why do you think the sound represented [insert their answer]?"
- **If they did not, take them back to the tab where they first heard an alert:**
  - "This is the alert that played during the task. Why do you think that you did not hear the alert?"
  - "What security situation do you think the sound conveyed?"
  - "Why do you think the sound represented [insert their answer]?"

### **3. Scenarios for Invalid Certificate**

- a. Close all previous tabs (if any) and open a new tab in Google Chrome browser.
- b. Read instructions to users:
  - “During this stage of testing you will be navigating NSA’s website to look for some information. I will give you a series of tasks related to this website. After I read off a task and tell you to begin, you will navigate the website in order to complete that task. The security alert system will be turned on, so you may hear a sound that indicates a security situation. If you hear a security alert during the task, please stop performing the task and inform me that you have heard an alert. I may ask you further questions about the alert and the security situation.”
- c. Present the 3 tasks to users. For each user, the order of the tasks should be randomized. Read the task to the participant and tell them to begin. When they have completed the task, open a new blank tab (closing all others).
- d. **No-alert task (Task 1):** “Finding what NSA does and Job positions available”
  - [correct response: Find the relevant information]
  - i. **Task 2:** “Finding Resources for Educating people about security”
    - [alert will sound when user visits “NSA/DHS CAE” institutions webpage]
  - ii. **Task 3:** “Finding Information about NSA’s CSfC program”
    - [alert will sound will sound when user visits “CNSS website” webpage]
- e. After the participant completes each task during which alerts sound (tasks ii and iii), ask the participant questions about the alerts

#### **4. Scenarios for Downloading of potentially Dangerous File types**

- a. Close all previous tabs and open a new tab in Google Chrome browser.
- b. Read instructions to users:
  - “During this stage of testing you will be using Journal websites to look for particular papers of your interest. I will give you a series of tasks so as to what information to look for. After I read off a task and tell you to begin, you will navigate the website in order to complete that task. The security alert system will be turned on so you may hear a sound that indicates a security situation. If you do hear a security alert during the task, please stop performing the task and inform me that you have heard an alert. I may ask you further questions about the alert and the security situation.”
- c. Present the 3 tasks to users. For each user, the order of the tasks should be randomized. Read the task to the participant and tell them to begin. When they have completed the task, open a new blank tab (closing all others).
  - i. **No-alert task (Task 1):** “Looking for a list”
    - [correct response: Note down the list of Most Read papers on the main page]
  - ii. **Task 2:** “Downloading a Research paper”
    - [alert will sound when participant downloads “pdf” (research paper) file]
  - iii. **Task 3:** “Downloading Citation of a paper”
    - [alert will sound when participant downloads “ris” citation file of the research paper]
- d. After the participant completes the task during which alerts sound (task ii,iii), ask the participant questions about the alerts

## **5. Scenarios for checking malicious webpages using URL Heuristics**

- a. Close all previous tabs and open a new tab in Google Chrome browser.
- b. Read instructions to users:
  - “During this stage of testing you will be working on a Website and find certain information on it. I will give you a series of tasks so as to what information to look for. After I read off a task and tell you to begin, you will navigate the website in order to complete that task. The security alert system will be turned on so you may hear a sound that indicates a security situation. If you do hear a security alert during the task, please stop performing the task and inform me that you have heard an alert. I may ask you further questions about the alert and the security situation.”
- c. Present the 3 tasks to users. For each user, the order of the tasks should be randomized. Read the task to the participant and tell them to begin. When they have completed the task, open a new blank tab (closing all others).
  - i. **No-alert task (Task 1):** “Looking for News”
    - [correct response: participant will note down the top 3 headlines on the news section on main page]
  - ii. **Task 2:** “Looking for Personnel Names”
    - [alert will sound when participant opens the management page to find the names of the first two people on the list]
  - iii. **Task 3:** “Looking for Individual Customs Declaration”
    - [alert will sound when participant visits the mentioned webpage to look for the information]
- d. After the participant completes the task during which alerts sound (task ii,iii), ask the participant questions about the alerts

## **6. Answer Demographic Questions**

- a. Read instructions to users.
  - “During this stage of testing, I am going to ask you questions about yourself. If you would like me to repeat a question, please let me know.”
- b. Ask user demographic questions.

## **7. Debriefing Statement**

- “That concludes our testing. Thank you for participating in our study. Your feedback will help us improve the sounds that we created to alert users about security situations that they might experience while using their computers. Do you have any comments or questions?”