



Highly Commended

Programming, Apps & Robotics Year 3-4

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The Report for “ChemBuzz Jr” App

Objective

The app ChemBuzz Jr is designed as an educational game for primary school age children from school Year 2 to Year 6. I want to show the children of the school Year 2 to Year 6 the fun side of science and make learning easier for them.

Purpose

I understand that children can find lots of experiments online or videos on youtube, but for youngsters I highly recommend this app because they do not have to search for experiments from different places. I wanted to solve the problem of too much searching by children and parents to learn basic experiments that can be done at home. I have tried to make an interactive app which has the summary of the five experiments that children can understand in a simple way.

This app a fun way to introduce some basic chemistry concepts. My app provides five interesting experiments that children can do at home. This app comes with the safety information about some of the chemicals used in the experiments and then a quiz about the chemicals and experiments. It also has a full explanation of the process of the experiment and some brief, easy to understand description of the science behind the experiments.

Tell me more about this app!

I think my app ChemBuzz Jr is very appealing and it will help many children learn basic science at home. I have been learning block coding since March 2021 and I have used what I have learned and a coding platform called **thinkable live** to develop this app.

I plan to update this app with new experiments and new features as I continue to learn and explore more coding.

Currently, the ChemBuzz Jr can be downloaded on mobile or run on a computer by sending an email to pradyun.parikh@gmail.com requesting an access to my amazing app!

I am waiting for the permission from my parents to purchase a licence and make ChemBuzz Jr downloadable from the Google Play Store. Unfortunately, my current app cannot be available on the Apple App Store, but it can work on any Apple iOS devices by requesting on the email above.

How to Access the app “ChemBuzz Jr”

This app is downloadable through an .apk file just like just like all other apps.

If it is not found on the Google Play Store, then Use the steps below to use the app.

- 1) Please send an email to pradyun.parikh@gmail.com to request for the app.
- 2) Android Users: Android users will receive a reply from me which will contain the downloadable .apk file.

<https://drive.google.com/file/d/1-2VLq-dYceQbuM1iD5v5TTLUsM41V25V/view?usp=drivesdk>

- 3) iOS Users: iOS users are advised to wait for a few minutes to an hour. The users will receive a secure email from Thunkable support. This email will contain all instructions the user need to follow to download the iOS version of the app.

Problems I faced

Because this was my first try at developing an app, I faced many problems. Some of the main ones were,

- I had to check if the design I wanted can be done by block coding I am learning.
- I learned that the platform Thunkable would not allow zooming in function.
- The platform Thunkable would only allow a certain amount of text inside a label otherwise it will go out of the screen.
- I had to change 1 out of 5 experiments because it was not appropriate for children.
- It was little difficult to find animated .gif files I wanted for my app.
- It was hard to find simple scientific reasons behind the experiments for children.
- It was hard to snip and print the hard copy of the code.
- I had faced many coding glitches and had to make multiple copies of the codes so that I do not lose the coding I had done.
- I had to ask some people to test my app on their iOS and Android devices and took their suggestions to make changes in my app.
- I had to learn some advanced coding from my teacher quickly so then I can apply the concept in the app.
- I had to remember to copy links of all internet information I used.
- Finding or making the sound files I wanted for my app was very difficult for me. My teacher taught me how to do it, I had to find copyright free sounds from youtube and snip specific sounds from video files and convert them to audio files. My father taught me how to covert .mp4 video files to .mp3 audio files.

My Journey to the Development of my First App

- I had to come up with an idea for the design of the app.
- I had to come up with a unique name for my app.
- I had to come up with unique ideas and concept for my app.
- I had to search many experiments and decide 5 for my app.
- These 5 experiments that children can do at home.
- The 5 experiments have materials that many people have at home.
- I had to make a list of all the chemicals in my house and took photographs.
- I had to find out about the chemicals needed for the experiments so then I could do my safety screen.
- I had to find the safety of some chemicals and understand it with the help of my father.
- I had to develop quiz questions and answers.
- I had to learn the code necessary for the app.
- I had to find sound effects, gifs and images for the experiments.
- I had to prepare a step by step process.
- I had to put that step by step process into the code.
- Each step of the code I had to test the app.
- I had to draw and colour a unique logo for my app.
- I had to do multiple copies of my app until one was finalized.
- I had to make it children friendly so that it is easy to use.
- I had to come up with a description of my app.
- Thinkable would not allow zooming in.
- Thinkable would only allow a certain amount of text inside a label otherwise it will get out of the screen
- Thinkable could only except mp3 files for images, gifs and sound effect
- For my app I only used bock based coding.

Acknowledgements

I am very grateful to my online coding teacher, Ms Heenas Haseeb, for teaching me how to code and troubleshoot problems which helped me code my "ChemBuzz Jr", for example, inserting animated .gif files and audio .mp3 files. She also made children friendly new images of experiments for me so that I could put them in my app and then helped me make this app downloadable by the users.

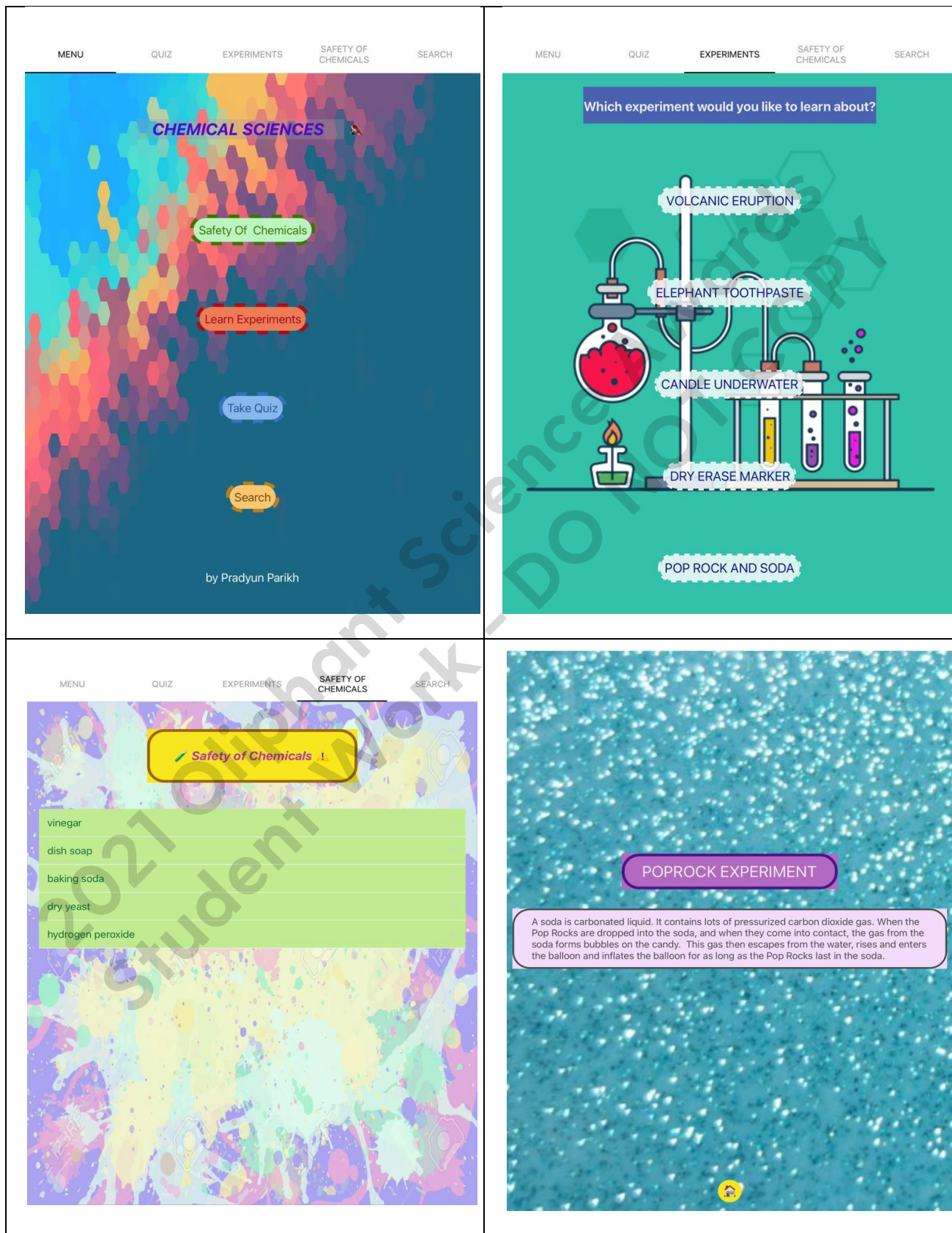
I like to acknowledge my parents for encouraging me to develop this app for Oliphant Science Awards and checking and formatting this report.

I like to thank my school science teacher for sending over my form and discussing some ideas with me.

References

- a) Dish soap gig: Special thanks to RRRSA from <https://tenor.com/view/soap-gif-19109993>
- b) Baking soda: https://www.pinclipart.com/pindetail/JobiRb_baking-soda-use-instead-of-toilet-and-shower/
- c) Hair spray: Special thanks to angela from https://www.clipartmax.com/middle/m2H7K9d3K9A0K9m2_hairspray-bottle-clipart-6-by-angela-hairspray-spraying-gif-cartoon/
- d) Hydrogen Peroxide: <https://camachem.com/blog/post/what-is-hydrogen-peroxide>
- e) https://www.google.com/search?q=cool+experiments+to+do+at+home+with+household+items&rlz=1C1CHBD_en-GBAU946AU946&oq=COOL+&aqs=chrome.0.69i59l2j0i67j69i57j0i67l2j0i433j0i67j0l2.4272j0j7&sourceid=chrome&ie=UTF-8
- f) <https://www.youtube.com/watch?v=p5qvi20J5IM>

Screenshots of the ChemBuzz Jr App





Screenshots of Codes used in ChemBuzz Jr App

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Student Work - DO NOT COPY

MENU

QUIZ

EXPERI
MENTS

SAFETY
OF CHE
MICALS

SEARCH

CHEMICAL SCIENCES



Safety Of Chemicals

Learn Experiments

Take Quiz

Search

by Pradyun Parikh

```
when Buttonstopmusic Click
do call Sound1 's Stop
```

```
when Buttonsafe Click
do call Sound1 's Stop
set Sound1 's source to clickitty.mp3
call Sound1 's Play
with output
error
then do when Play is done
wait 1 seconds
navigate to Safety of Chemicals
```

```
when Buttonsearch Click
do call Sound1 's Stop
set Sound1 's source to clickitty.mp3
call Sound1 's Play
with output
error
then do when Play is done
wait 1 seconds
navigate to search
```

```
when Buttonquiz Click
do call Sound1 's Stop
set Sound1 's source to clickitty.mp3
call Sound1 's Play
with output
error
then do when Play is done
wait 1 seconds
navigate to Quiz
```

```
when buttonexper Click
do call Sound1 's Stop
set Sound1 's source to clickitty.mp3
call Sound1 's Play
with output
error
then do when Play is done
wait 1 seconds
navigate to Experiments
```

```
when Menu Opens
do call Sound1 's Stop
wait 1 seconds
```

1 / 10 — Score: 0

***What would you apply on
your cut skin?***

water

lemon juice

Next Question

initialize app variable qno to 0

initialize app variable SCOREv to 0

when Buttonnext Click

```
do
  set app variable qno to [app variable qno + 1]
  set Label2qnum's Text to [join [app variable qno] ["/"] [10]]
  if [app variable qno] = 1
  do
    set Label1ques's Text to "What would you apply on your cut skin?"
    set Button3's Text to "water"
    set Button4's Text to "lemon juice"
  else if [app variable qno] = 2
  do
    set Label1ques's Text to "What do you wear while using hydrogen peroxide?"
    set Button3's Text to "Safety Goggles"
    set Button4's Text to "Superhero Cape"
  else if [app variable qno] = 3
  do
    set Label1ques's Text to "What do you mix with vinegar to make a volcano e..."
    set Button3's Text to "Lemon Juice"
    set Button4's Text to "Baking Soda"
  else if [app variable qno] = 4
  do
    set Label1ques's Text to "What is the most hazardous item in the experimen..."
    set Button3's Text to "Duct Tape"
    set Button4's Text to "Matchbox"
  else if [app variable qno] = 5
  do
    set Label1ques's Text to "How long can the candle burn under water?"
    set Button3's Text to "Until the wick is wet with water"
    set Button4's Text to "Until there is oxygen in the water."
```

```
else if [app variable qno] = 5
do
  set Label1ques 's Text to "How long can the candle burn under water?"
  set Button3 's Text to "Until the wick is wet with water"
  set Button4 's Text to "Until there is oxygen in the water."

else if [app variable qno] = 6
do
  set Label1ques 's Text to "In the poprock experiment, why do the balloons i..."
  set Button3 's Text to "They produce carbon dioxide"
  set Button4 's Text to "They are yummy"

else if [app variable qno] = 7
do
  set Label1ques 's Text to "Why does the image you drew float in the experim..."
  set Button3 's Text to "Ink dissolves in water"
  set Button4 's Text to "Ink does not dissolve in water"

else if [app variable qno] = 8
do
  set Label1ques 's Text to "What do you mix with hydrogen peroxide to make ..."
  set Button3 's Text to "dry yeast and dish soap"
  set Button4 's Text to "Pop rocks and dish soap"

else if [app variable qno] = 9
do
  set Label1ques 's Text to "Which of these substance dissolves in water?"
  set Button3 's Text to "Sand"
  set Button4 's Text to "Sugar"

else if [app variable qno] = 10
do
  set Label1ques 's Text to "What comes out of volcanic eruption?"
  set Button3 's Text to "Toxic gases and hot lava"
  set Button4 's Text to "Water and oxygen"

else if [app variable qno] = 10
do
  set Label1ques 's Text to "What can you use to clean the bathroom?"
  set Button3 's Text to "Baking soda and dish washing tablet"
  set Button4 's Text to "bathroom cleaner and water"
```

```
else if [app variable qno] = 10
do
  set Label1ques 's Text to "What comes out of volcanic eruption?"
  set Button3 's Text to "Toxic gases and hot lava"
  set Button4 's Text to "Water and oxygen"
else if [app variable qno] = 10
do
  set Label1ques 's Text to "What can you use to clean the bathroom?"
  set Button3 's Text to "Baking soda and dish washing tablet"
  set Button4 's Text to "bathroom cleaner and water"
if [app variable qno] ≥ 11
do
  set app variable qno to 0
  set Label2qunum 's Text to [join [app variable qno]
  " / "
  " 10 "]
if [app variable qno] = 0
do
  set Label1ques 's Text to "Please press the \"next\" button"
  set Button3 's Text to "-"
  set Button4 's Text to "-"
set Button3 's Background Color to [red]
set Button4 's Background Color to [red]
if [app variable SCOREv] ≥ 10
do
  navigate to youwin_hidden
```

```
when Button3 Click
do
  if Label1ques 's Text = "What would you apply on your cut skin?"
  do
    set Button3 's Background Color to green
    set Sound1 's source to win sound.mp3
    set Button4 's Background Color to red
    change app variable SCOREv by 1
    set LabelSCORE 's Text to join "SCORE:" app variable SCOREv
  else if Label1ques 's Text = "How long can the candle burn under water?"
  do
    set Button3 's Background Color to red
    set Sound1 's source to Quack Sound Effect.mp3
    set Button4 's Background Color to green
  else if Label1ques 's Text = "What is the most hazardous item in the experimen..."
  do
    set Sound1 's source to Quack Sound Effect.mp3
    set Button3 's Background Color to red
    set Button4 's Background Color to green
  else if Label1ques 's Text = "What comes out of volcanic eruption?"
  do
    set Button3 's Background Color to green
    set Sound1 's source to win sound.mp3
    set Button4 's Background Color to red
    change app variable SCOREv by 1
    set LabelSCORE 's Text to join "SCORE:" app variable SCOREv
  else if Label1ques 's Text = "What do you wear while using hydrogen peroxide?"
  do
    set Button3 's Background Color to green
    set Sound1 's source to win sound.mp3
    set Button4 's Background Color to red
    change app variable SCOREv by 1
```

```
else if Label1ques 's Text = "What do you wear while using hydrogen peroxide?"
do
  set Button3 's Background Color to green
  set Sound1 's source to win sound.mp3
  set Button4 's Background Color to red
  change app variable SCOREv by 1
  set LabelSCORE 's Text to join "SCORE:" app variable SCOREv

else if Label1ques 's Text = "In the poprock experiment, why do the balloons i..."
do
  set Button3 's Background Color to green
  set Sound1 's source to win sound.mp3
  set Button4 's Background Color to red
  change app variable SCOREv by 1
  set LabelSCORE 's Text to join "SCORE:" app variable SCOREv

else if Label1ques 's Text = "Why does the image you drew float in the experim..."
do
  set Sound1 's source to Quack Sound Effect.mp3
  set Button3 's Background Color to red
  set Button4 's Background Color to green

else if Label1ques 's Text = "What do you mix with vinegar to make a volcano e..."
do
  set Sound1 's source to Quack Sound Effect.mp3
  set Button3 's Background Color to red
  set Button4 's Background Color to green

else if Label1ques 's Text = "What do you mix with hydrogen peroxide to make ..."
do
  set Button3 's Background Color to green
  set Sound1 's source to win sound.mp3
  set Button4 's Background Color to red
  change app variable SCOREv by 1
  set LabelSCORE 's Text to join "SCORE:" app variable SCOREv
```




```
when Button4 Click
do
  if Label1ques's Text = "What would you apply on your cut skin?"
  do
    set Sound1's source to Quack Sound Effect.mp3
    set Button3's Background Color to green
    set Button4's Background Color to red
  else if Label1ques's Text = "How long can the candle burn under water?"
  do
    set Button3's Background Color to red
    set Button4's Background Color to green
    set Sound1's source to win sound.mp3
    change app variable SCOREv by 1
    set LabelSCORE's Text to join "SCORE:" app variable SCOREv
  else if Label1ques's Text = "What is the most hazardous item in the experimen..."
  do
    set Button3's Background Color to red
    set Button4's Background Color to green
    set Sound1's source to win sound.mp3
    change app variable SCOREv by 1
    set LabelSCORE's Text to join "SCORE:" app variable SCOREv
  else if Label1ques's Text = "What comes out of volcanic eruption?"
  do
    set Sound1's source to Quack Sound Effect.mp3
    set Button3's Background Color to green
    set Button4's Background Color to red
  else if Label1ques's Text = "What do you wear while using hydrogen peroxide?"
  do
    set Sound1's source to Quack Sound Effect.mp3
    set Button3's Background Color to green
    set Button4's Background Color to red
  else if Label1ques's Text = "In the poprock experiment, why do the balloons b..."
  do
    set Sound1's source to Quack Sound Effect.mp3
```


Which experiment would you like to learn about?

VOLCANIC ERUPTION

ELEPHANT TOOTHPASTE

CANDLE UNDERWATER

DRY ERASE MARKER

POP ROCK AND SODA



```
initialize app variable expName to " "
```

```
when ButtonELAPHANTTOOTH Click  
do  
  set Sound1's source to clickitty.mp3  
  call Sound1's Play  
  with output  
  then do when Play is done  
  wait 1 seconds  
  set app variable expName to "toothpaste"  
  navigate to experi_hidden
```

```
when ButtonVOL Click  
do  
  set Sound1's source to clickitty.mp3  
  call Sound1's Play  
  with output  
  then do when Play is done  
  wait 1 seconds  
  set app variable expName to "volcano"  
  navigate to experi_hidden
```

```
when ButtonCAND Click  
do  
  set Sound1's source to clickitty.mp3  
  call Sound1's Play  
  with output  
  then do when Play is done  
  wait 1 seconds  
  set app variable expName to "candle"  
  navigate to experi_hidden
```

```
when Buttonpoprock Click  
do  
  set Sound1's source to clickitty.mp3  
  call Sound1's Play  
  with output  
  then do when Play is done  
  wait 1 seconds  
  set app variable expName to "poprock"  
  navigate to experi_hidden
```

```
when Buttontdem Click  
do  
  set Sound1's source to clickitty.mp3  
  call Sound1's Play  
  with output  
  then do when Play is done  
  wait 1 seconds  
  set app variable expName to "marker"  
  navigate to experi_hidden
```



MENU

QUIZ

EXPERI
MENTS

SAFETY
OF CHE
MICALS

SEARCH



Safety of Chemicals

vinegar



dish soap



baking soda



dry yeast



hydrogen peroxide



```
when Safety Hidden Opens
do
  set Loading_cont's Visible to true
  wait 4 seconds
  set Loading_cont's Visible to false
  if app variable chem = "1"
  do
    set Imagehiddensafe's Picture to Vinegar gif gif
    set Label8's Text to "Do not drink Vinegar, it can burn your mouth and..."
  else if app variable chem = "2"
  do
    set Imagehiddensafe's Picture to teno gif
    set Label8's Text to "Do not put dish soap liquid inside your mouth. I..."
  else if app variable chem = "3"
  do
    set Imagehiddensafe's Picture to baking soda gif image 2.jpg
    set Label8's Text to "Also known as Sodium Bicarbonate, baking soda is..."
  else if app variable chem = "4"
  do
    set Imagehiddensafe's Picture to dry yeast gif gif
    set Label8's Text to "Yeast is a fungus. Protect your eyes when using ..."
  else if app variable chem = "5"
  do
    set Imagehiddensafe's Picture to hydrogen peroxide gif.jpg
    set Label8's Text to "Do not breathe in hydrogen peroxide when using i..."

when Buttonback Click
do
  navigate to Safety of Chemicals
```



MENU


QUIZ

EXPERI
MENTS

SAFETY
OF CHE
MICALS

SEARCH

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initialize app variable url1 to " " " "

```
when Button5 Click  
do  
  set Sound1's source to spacey.mp3  
  call Sound1's Play  
  with output error  
  then do when Play is done  
  wait 10 seconds  
  set app variable url1 to join " https://en.wikipedia.org/wiki/ " Text_Input1's Text  
  set Web_Viewer1's URL to app variable url1
```

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