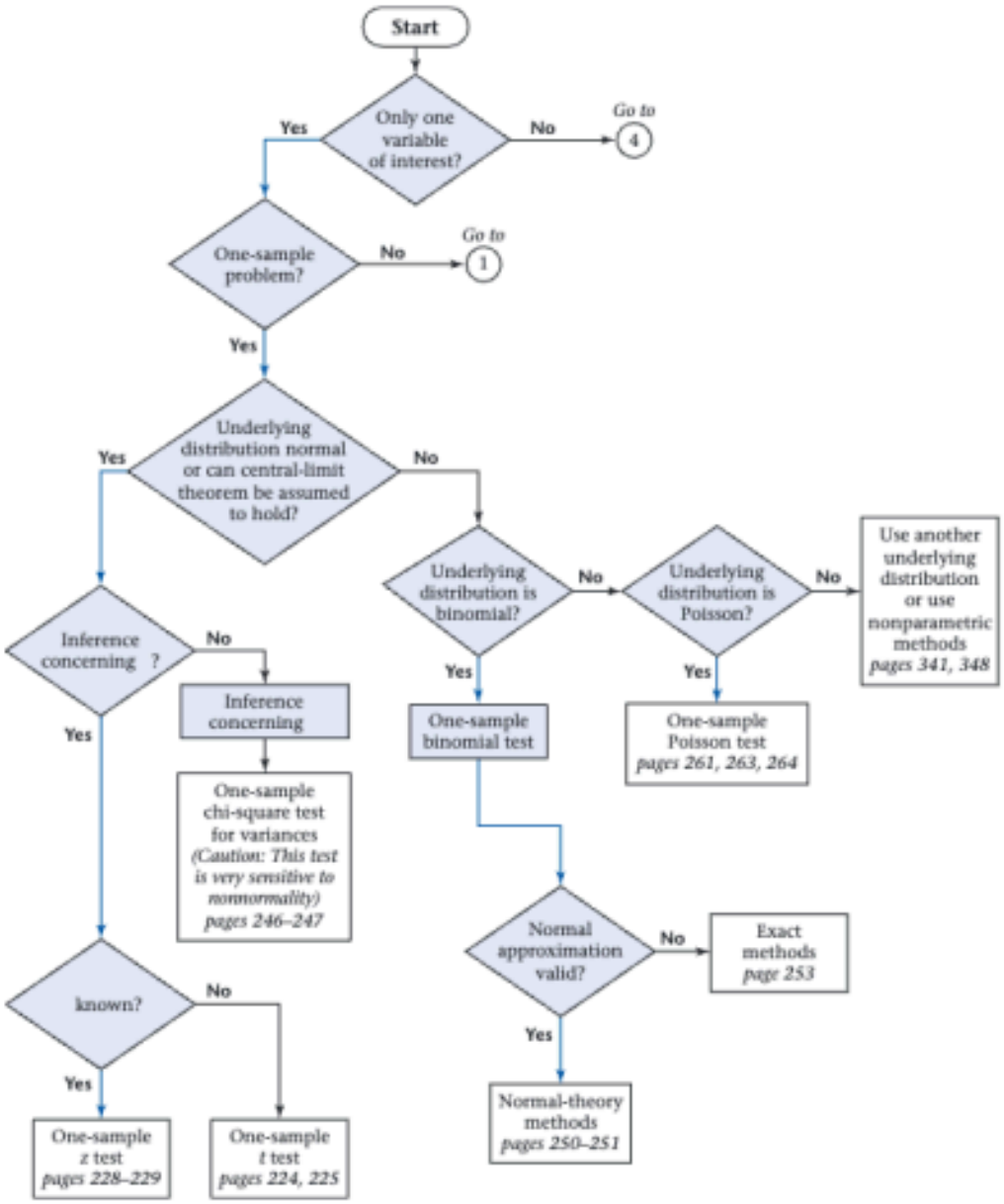
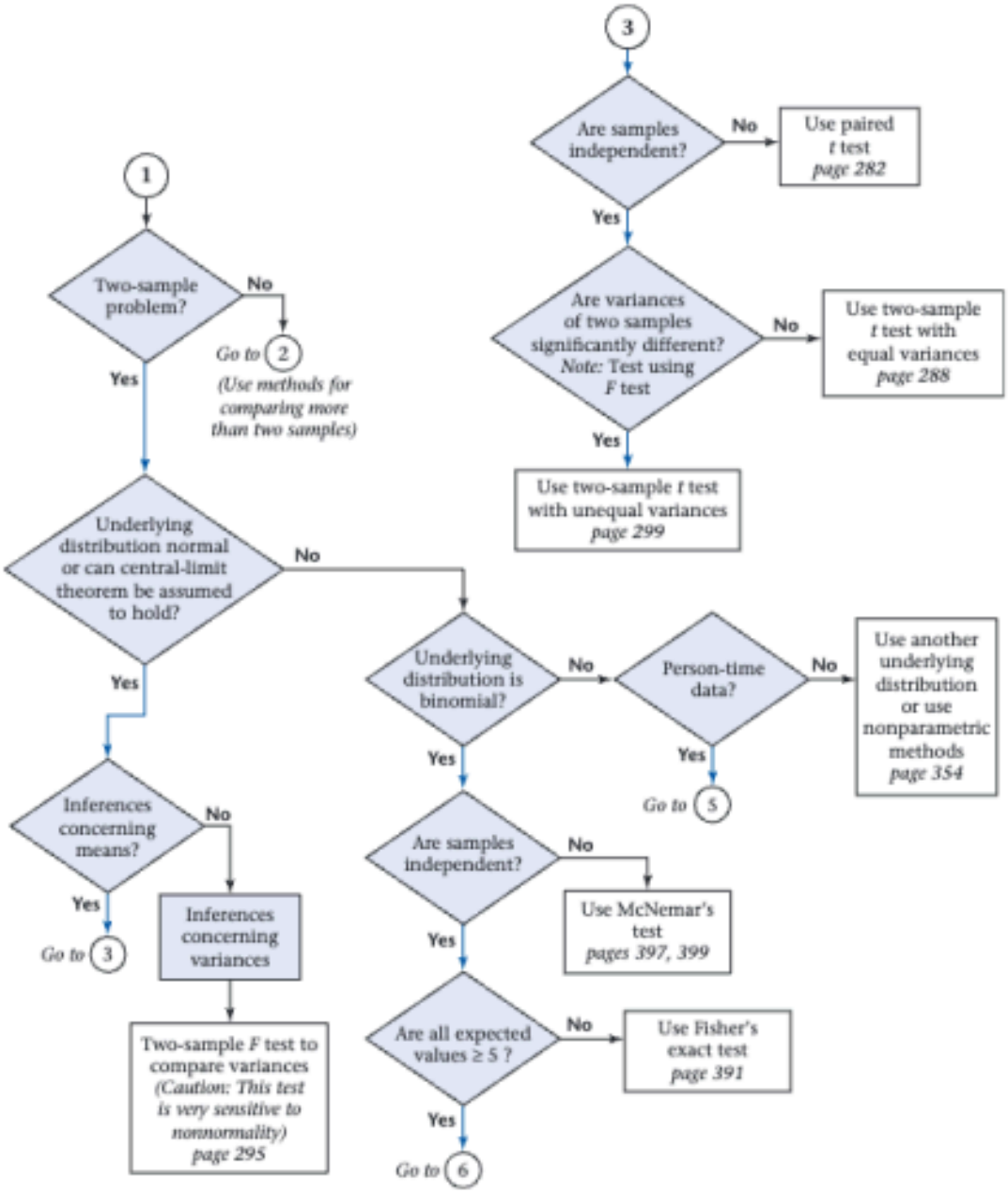
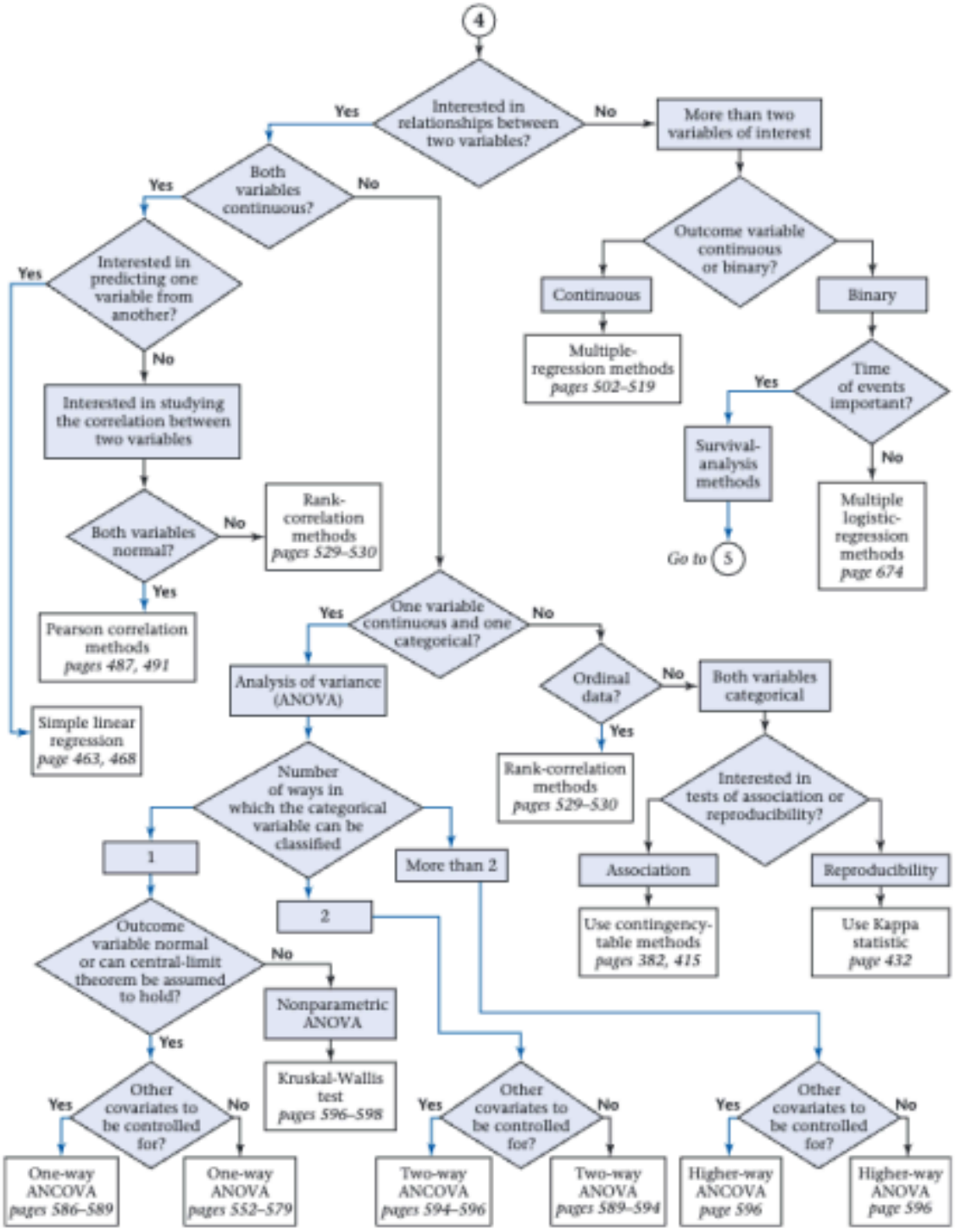
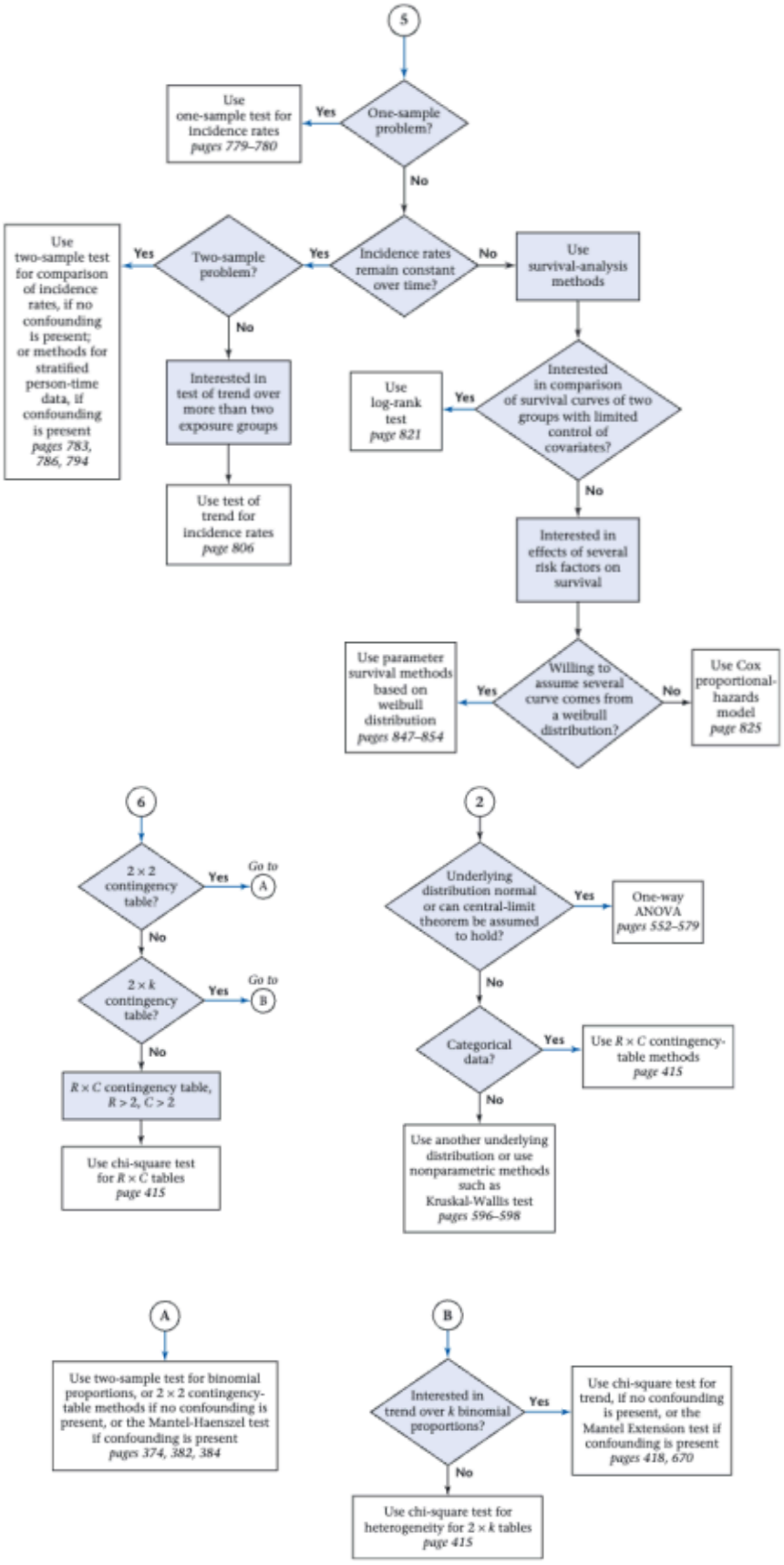
STATISTICAL TESTS DETERMINATION WEBSITE

The flowchart provided below was used for creating the backend. The determination of the statistical tests was enabled by it.




1
Two-sample problem?
No
Go to 2
(Use methods for comparing more than two samples)
Yes
Underlying distribution normal or can central-limit theorem be assumed to hold?
No
Yes
Inferences concerning means?
No
Yes
Go to 3
Inferences concerning variances
Two-sample F test to compare variances (Caution: This test is very sensitive to nonnormality) page 295
3
Are samples independent?
No
Use paired t test page 282
Yes
Are variances of two samples significantly different? Note: Test using F test
No
Use two-sample t test with equal variances page 288
Yes
Use two-sample t test with unequal variances page 299
Underlying distribution is binomial?
No
Person-time data?
No
Use another underlying distribution or use nonparametric methods page 354
Yes
Go to 5
Yes
Are samples independent?
No
Use McNemar's test pages 397, 399
Yes
Are all expected values ≥ 5 ?
No
Use Fisher's exact test page 391
Yes
Go to 6


4
Interested in relationships between two variables?
Yes
No
More than two variables of interest
Outcome variable continuous or binary?
Continuous
Multiple-regression methods pages 502–519
Binary
Time of events important?
Yes
Survival-analysis methods
Go to 5
No
Multiple logistic-regression methods page 674
Both variables continuous?
Yes
No
Interested in predicting one variable from another?
Yes
No
Simple linear regression page 463, 468
Interested in studying the correlation between two variables
Both variables normal?
No
Rank-correlation methods pages 529–530
Yes
Pearson correlation methods pages 487, 491
One variable continuous and one categorical?
Yes
No
Analysis of variance (ANOVA)
Number of ways in which the categorical variable can be classified
1
2
More than 2
Outcome variable normal or can central-limit theorem be assumed to hold?
No
Yes
Nonparametric ANOVA
Kruskal-Wallis test pages 596–598
Other covariates to be controlled for?
Yes
No
One-way ANCOVA pages 586–589
One-way ANOVA pages 552–579
Other covariates to be controlled for?
Yes
No
Two-way ANCOVA pages 594–596
Two-way ANOVA pages 589–594
Other covariates to be controlled for?
Yes
No
Higher-way ANCOVA page 596
Higher-way ANOVA page 596
Ordinal data?
No
Yes
Rank-correlation methods pages 529–530
Both variables categorical
Interested in tests of association or reproducibility?
Association
Use contingency-table methods pages 382, 415
Reproducibility
Use Kappa statistic page 432


5
One-sample problem?
Yes
Use one-sample test for incidence rates pages 779–780
No
Incidence rates remain constant over time?
Yes
Two-sample problem?
Yes
Use two-sample test for comparison of incidence rates, if no confounding is present; or methods for stratified person-time data, if confounding is present pages 783, 786, 794
No
Interested in test of trend over more than two exposure groups
Use test of trend for incidence rates page 806
No
Use survival-analysis methods
Interested in comparison of survival curves of two groups with limited control of covariates?
Yes
Use log-rank test page 821
No
Interested in effects of several risk factors on survival
Willing to assume several curve comes from a weibull distribution?
Yes
Use parameter survival methods based on weibull distribution pages 847–854
No
Use Cox proportional-hazards model page 825
6
2 × 2 contingency table?
Yes
Go to A
No
2 × k contingency table?
Yes
Go to B
No
R × C contingency table, R > 2, C > 2
Use chi-square test for R × C tables page 415
2
Underlying distribution normal or can central-limit theorem be assumed to hold?
Yes
One-way ANOVA pages 552–579
No
Categorical data?
Yes
Use R × C contingency-table methods page 415
No
Use another underlying distribution or use nonparametric methods such as Kruskal-Wallis test pages 596–598
A
Use two-sample test for binomial proportions, or 2 × 2 contingency-table methods if no confounding is present, or the Mantel-Haenszel test if confounding is present pages 374, 382, 384
B
Interested in trend over k binomial proportions?
Yes
Use chi-square test for trend, if no confounding is present, or the Mantel Extension test if confounding is present pages 418, 670
No
Use chi-square test for heterogeneity for 2 × k tables page 415

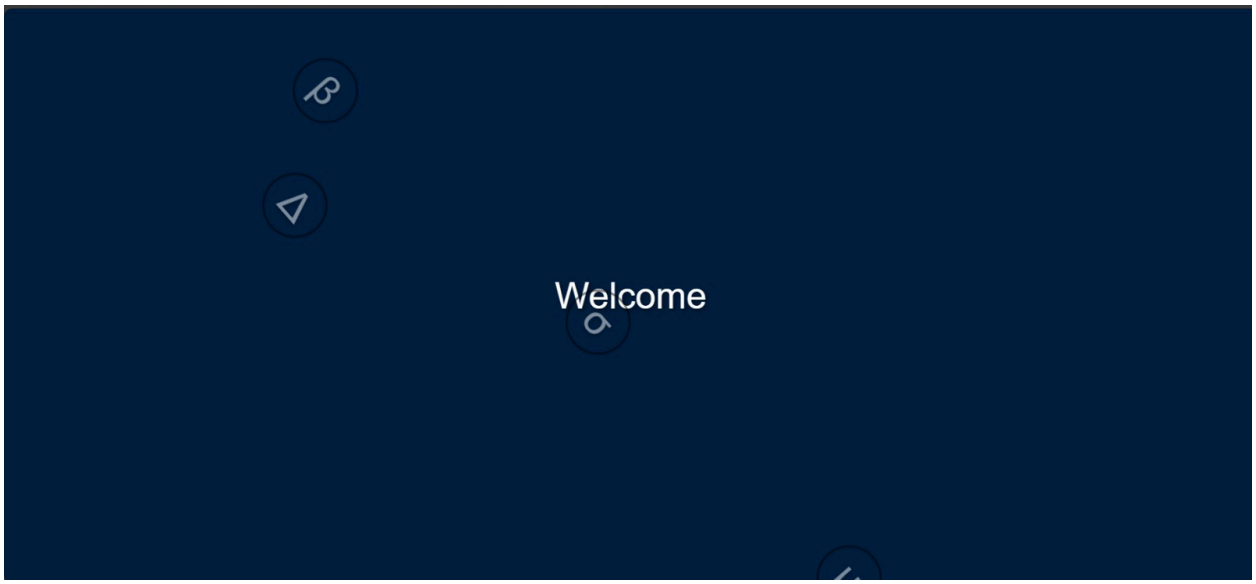
The website was built using CSS, HTML and Javascript. A description of the various functionalities has been provided. The website can be run by opening the welcome.html page in the browser of the user's choice. This website was made using a local server and has not been hosted elsewhere as of now.

Instructions to run the server

The webserver must be always started from the welcome page as the local storage for the server needs to be cleared for every run.
This website can be run by using the command:
python -m http.server
and creating a localhost server or by simply opening the welcome.html page in your browser.

Landing Page (code in welcome.html)

The landing page says Welcome in the centre. We have used animation to show flying symbols in the background. When the user clicks on the text that says 'Welcome', they will proceed to the next page.



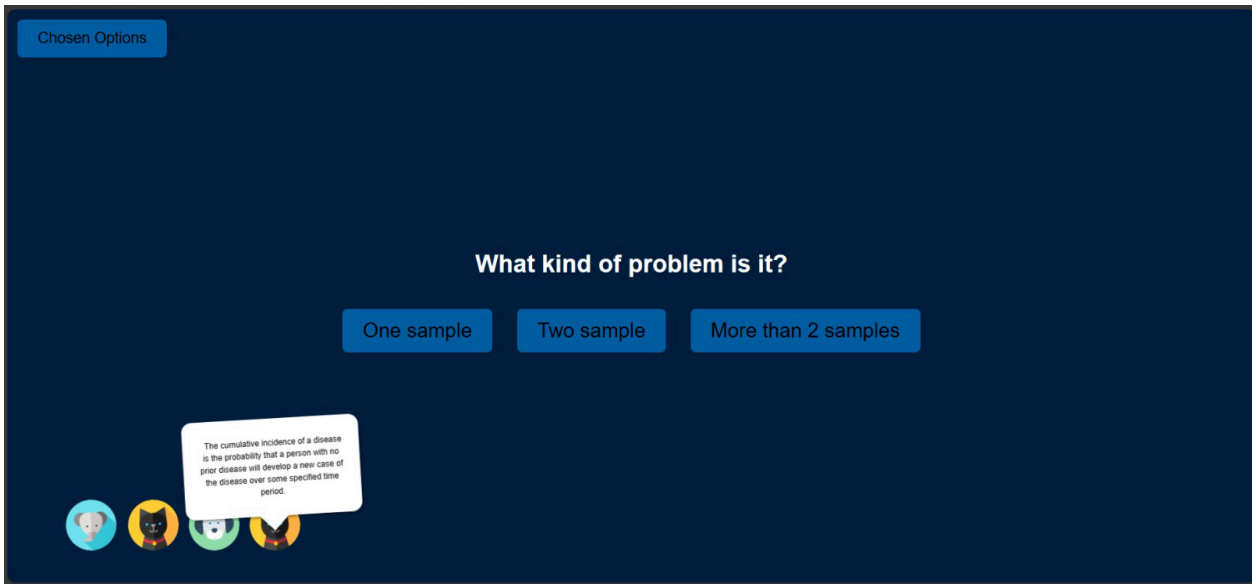
Questionnaire Pages (code in page1.html)

When the user is redirected to this page, the first question will be displayed on their screen. The user must answer a series of questions about their dataset and requirements. The backend (javascript code) will then predict the most appropriate statistical test(s) they can use for conducting their desired tests.
After completing the questionnaire, the most suitable test for the user will displayed on the screen along with confetti from both sides to indicate that the user has gotten the desired response and has reached the end of the website.

If at any point, the user would like to see what they have previously answered, they can click on the ‘Chosen Options’ button which will redirect them to the recorded responses page.

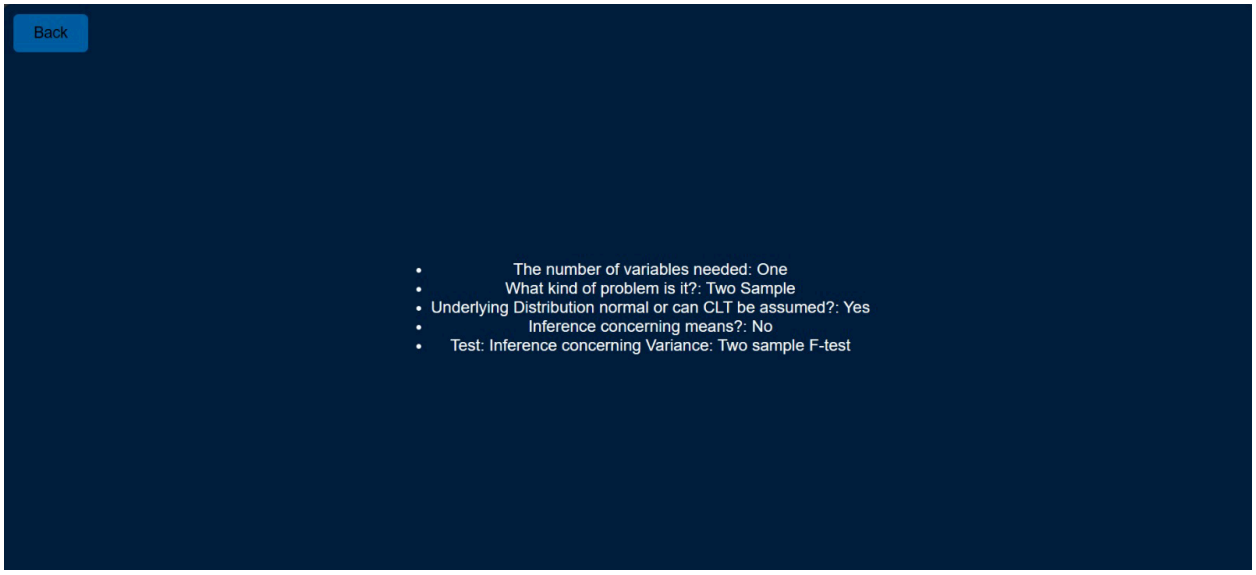
Classroom Trivia (Bottom Left)

The website has used bobblehead animation to create the simulation of a classroom at the bottom-left of the screen. A speech bubble has been added to display statistical trivia to make the website more interactive. With every question, a random fact is displayed by a random bobblehead. It makes the screen more graphic, and colourful and an overall pleasant experience for the user. They would also learn something that could be helpful in the study they are conducting.



Recorded Responses Pages (code in page2.html)

The user can see what they have responded to previously. They can also see the results that they got in previous sessions. Upon clicking the ‘Back’ button, they can directly go back to the session and continue with the further questions from the page they were redirected from.



Team Members

- Mehak Gopal - 2021475
- Bhavya Gupta - 2021458
- Nalin Arora - 2021478