PROGRAM DOCUMENATION FOR ScreeningTest.py: (Medical Screening Tests)

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ABOUT THIS DOCUMENT

- This document accompanies the Medical Screening Tests App.
- This document is hosted at GutHub.
- This document must be saved as a .PDF file to be readable at Github.

LINKS FOR RESEARCH INTO SCREENING TESTS

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4389712/ Suggested by professor

PROGRAM SUMMARY. TEXT FOR INCLUSION IN CODE

```
r"""

################################################################################
#                  "Accuracy" Of Medical Screening Tests
################################################################################
#
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#
# ScreeningTest:  PROGRAM PURPOSE.
#
#  Medical screening tests vaunting a very high "general accuracy" can give
#  staggering levels of false results when the prevalence of a disease is low.
#  This program explores the effect the prevalence of an infection in a
#  population on the usefullness of screening tests. The goal is to
#  demonstrate that the Epidemiology of screening tests is complex and
#  they are usually less reliable than commonly supposed.
#
# Inputs:
#       A GUI asks the user to enter the following medical test statistics.
#         Population:
#         Test Sensitivity:
#         Test Specificity:
#         Start of Prevalence Range.
#         End of Prevalence Range:
#         Prevalence of Interest:
#         CheckBoxes allowing the plotting of different statitics.
#
# Outputs:
#       (1) A plot with:
#          x axis. A range of disease prevalances.
#          y axis:
#               Positivie Predictive Value. (PPV)
#               Negative Predictive Value. (NPV)
#               False Positives (FP)
#               False Negatives (FN)
#               General Accuracy (ACC) (A somewhat misleading item !)
#               Prevalence of Interest (PREVINT ) (A Vertical line).)
#       (2) A table of the generated data used to create the plots.
#       (3) A video tour of the app and its features
#
# Features:
#      All outputs can be saved to the users local computer, viewed full
#      screen or browsed from the GUI
#          This is true of the entire projects code.
#
# Result Verification:
#   Our graphs seems correct.  See a similar one at:
#   https://epitools.ausvet.com.au/predictivevalues
#
################################################################################
"""
```