Program source Code

import sys

def checkInput(age, gender):

#check if age and gender inputs are valid

#if age is not digit or gender is not b/g, warn user

if(not age.isdigit()):

print("Invalid Age, Try Again")

return False

if(gender.lower() != 'b' and gender.lower() != 'g'):

print("Invalid Gender, Try Again")

return False

return True

def main():

#takes age and gender input from user

#compares age and gender to input boundaries to determing ticket type

#if not eligible, warn user

inputCheck = False

while(not inputCheck):

age = input("How old is the competitor? (In years): ")

gender = input("What gender is the competitor? (B/G): ")

inputCheck = checkInput(age, gender)

age = int(age)

# Boys and girls age<6, can participate in Rhyming.

if(age < 6):

print("Purchase tickets for the Rhyming Competition")

# Boys age >7 and <10, can participate in Storytelling.

# Girls age >7 and <10, can participate in Drawing.

if(age > 7 and age < 10):

if(gender.lower() == "b"):

return print("Purchase tickets for the Storytelling Competition")

if((gender.lower() == "g")):

return print("Purchase tickets for the Drawing Competition")

# Boys age >11 and <15, can participate in a Quiz.

if(age > 11 and age < 15 and gender.lower() == "b"):

return print("Purchase tickets for the Quiz Competition")

# Girls age >10 and <15 , can participate in Essay Writing.

if(age > 10 and age < 15 and gender.lower() == "g"):

return print("Purchase tickets for the Essay Writing Competition")

# Girls and boys age >20, can participate in Poetry.

if(age > 20):

return print("Purchase tickets for the Poetry Competition")

else:

print("The competitor is not eligible for competition")

# Check for the system version.

# Python 3 is required for the input

# If using python 3, then call the main function

if (sys.version\_info > (3, 0)):

main()

# Otherwise fail gracefully

else:

print("You need python3 for this")

Diagram

A screenshot of a cell phone

Description automatically generated

List of predicates

age > 20 && (gender = b || gender = g)

age < 6 && (gender = b || gender = g)

age >7 && age <10 && gender = b

age >7 && age <10 && gender = g

age >11 && age < 15 && gender = b

age >10 && age < 15 && gender = g

Testing strategy & Oracle

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Test Case # | Description | Gender | Age | Expected Output | Actual Output | Result  (Pass/Fail) |
| 1 | Ticket for Storytelling | B | 8 | Purchase tickets for the storytelling competition | Purchase tickets for the storytelling competition | Pass |
| 2 | Ticket for Drawing | G | 8 | Purchase tickets for the drawing competition | Purchase tickets for the drawing competition | Pass |
| 3 | Ticket for Quiz | B | 14 | Purchase tickets for the quiz competition | Purchase tickets for the quiz competition | Pass |
| 4 | Ticket for Essay Writing | G | 14 | Purchase tickets for the essay writing competition | Purchase tickets for the essay writing competition | Pass |
| 5 | Ticket for Rhyming | B | 5 | Purchase tickets for the rhyming competition | Purchase tickets for the rhyming competition | Pass |
| 7 | Ticket for Poetry | G | 21 | Purchase tickets for the poetry competition | Purchase tickets for the poetry competition | Pass |
| 8 | Closure Error | B | 20 | Competitor is not eligible for the competition | Competitor is not eligible for competition | Pass |
| 9 | Shift Error | B | 9 | Purchase tickets for the storytelling competition | Purchase tickets for the storytelling competition | Pass |
| 10 | Shift error | B | 12 | Purchase tickets for the quiz competition | Purchase tickets for the quiz competition | Pass |
| 11 | Shift error | B | 21 | Purchase tickets for the poetry competition | Purchase tickets for the competition | Pass |
| 12 | Shift error | G | 9 | Purchase tickets for the drawing competition | Purchase tickets for the drawing competition | Pass |
| 13 | Shift error | G | 11 | Purchase tickets for the Essay Writing | Purchase tickets for the Essay Writing | Pass |
| 14 | Shift error | G | 5 | Purchase tickets for the rhyming competition | Purchase tickets for the rhyming competition | Pass |
| 15 | Closure error & tilted boundary | G | 20 | Competitor is not eligible for the competition | Competitor is not eligible for the competition | Pass |
| 16 | Closure error & tilted boundary | B | 6 | Competitor is not eligible for the competition | Competitor is not eligible for the competition | Pass |
| 17 | Closure error & tilted boundary | G | 6 | Competitor is not eligible for the competition | Competitor is not eligible for the competition | Pass |
| 18 | Closure error & tilted boundary | G | 10 | Competitor is not eligible for the competition | Competitor is not eligible for the competition | Pass |
| 19 | Closure error & tilted boundary | G | 15 | Competitor is not eligible for the competition | Competitor is not eligible for the competition | Pass |
| 20 | Closure error & tilted boundary | B | 11 | Competitor is not eligible for the competition | Competitor is not eligible for the competition | Pass |
| 21 | Closure error & tilted boundary | B | 15 | Competitor is not eligible for the competition | Competitor is not eligible for the competition | Pass |
| 22 | Closure error & tilted boundary | G | 7 | Competitor is not eligible for the competition | Competitor is not eligible for the competition | Pass |
| 23 | Closure error & tilted boundary | B | 7 | Competitor is not eligible for the competition | Competitor is not eligible for the competition | Pass |
| 24 | Closure error & tilted boundary | B | 10 | Competitor is not eligible for the competition | Competitor is not eligible for the competition | Pass |