Name student:

**Problem 1: 15p**

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| --- | --- | --- |
| **Definition of constants** |  | Your score |
| currentPop = 307357870 | 1 |  |
| secondsPerYear = 31536000 # (60s/min)\*(60min/hr)\*(24hr/day)\*(365days/yr) | 1 |  |
| secondsPerBirth = 7 | 1 |  |
| secondsPerDeath = 13 | 1 |  |
| secondsPerImmigration = 35 | 1 |  |
| **Perform math** |  |  |
| annualBirthRate = secondsPerYear / secondsPerBirth | 1 |  |
| annualDeathRate = secondsPerYear / secondsPerDeath | 1 |  |
| annualImmigrantRate =secondsPerYear / secondsPerImmigration | 1 |  |
| annualPop = annualBirthRate ­ annualDeathRate + annualImmigrantRate | 1 |  |
| projectedPop = annualPop + currentPop | 1 |  |
| **Print** |  |  |
| print("The population is",projectedPop) | 5 |  |
| Total | 15 |  |

**Problem 2: 15p**

|  |  |  |
| --- | --- | --- |
|  |  | Your score |
| **While loop** (should start with one time user input, number=input("Enter a number") | 5 |  |
| **Correct conditionals** | 5 |  |
| while number greater than 10 or number less than 1 |  |  |
| **Getting the input from the user** |  |  |
| number = input("Enter a number:") | 3 |  |
| **Print** |  |  |
| print number | 2 |  |
| Total | 15 |  |

**Problem 3: 20p**

|  |  |  |
| --- | --- | --- |
| **Getting the input from the user** |  | Your score |
| milespergallon= input("Enter the no. of miles per gallon:") | 5 |  |
| **3 cases** |  |  |
| if milespergallon greater than or equal to 30 print “nice job.” | 5 |  |
| else if milespergallon greater than or equal to 15 and milespergallon less than or equal to 29 print “not great, but okay.” | 5 |  |
| else print “so bad, so very, very bad.” | 5 |  |
| Total | 20 |  |

**Problem 4: 20 p**

|  |  |  |
| --- | --- | --- |
| **Defining variables and getting the input** |  | Your score |
| a = ”Fight the Dragon” b = ”Go Home” c = ”Save the Princess” choice = input(“Enter your choice: a) Fight the dragon b) Go Home c) Save the princess”) | 5 |  |
| **Loop to repeatedly ask the user for an option with right conditionals** |  |  |
| While choice does not equal b: | 5 |  |
| **#Case 1**  if choice equals a: print “you win”  choice = input(“Enter another choice:”) | 5 |  |
| **#Case 2**  else: # choice == c print “You saved the princess” choice = input(“Enter another choice:”) | 5 |  |
| print “Wimp” (belongs to while loop, if missing -2 points of the 5) |  |  |
| Total | 20 |  |

**Problem 5: 20p**

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| --- | --- | --- |
| **Defining the positions of the players** |  | Your score |
| player1\_it is in position x1,y1 player2\_not\_it is in position x2,y2 bool=true | 5 |  |
| **Looping until another player is tagged** |  |  |
| while(bool): player1\_it calls “Marco”  player2\_not\_it calls “Polo” Assume found the loudest player (in this case player2) Randomly move player2\_noti\_it | 5 |  |
| **changing the position of player1\_it** |  |  |
| if player2\_not\_it equals loudest    if x1<x2: x1=x1+1  else if x1>x2: x1=x1­1  else x1=x1  if y1>y2: y1=y1­1  else if y1<y2 y1=y1+1  else y1=y1 | 15 |  |
| **Correct conditionals and tagging Player2** |  |  |
| if x1 equals x2 and y1 equals y2: print “Player 2 is tagged. Game over” bool=false | 5 |  |
| Total | 30 |  |

**Challenge Part:**

player1\_it is in position x1,y1 player2\_not\_it is in position x2,y2 bool=true while(bool):

player1\_it calls “Marco” player2\_not\_it calls “Polo” Assume found the loudest player (in this case player2) Randomly move player2\_noti\_it loop through players to find the loudestplayer then player\_it moves toward loudestplayer if player2\_not\_it equals loudest

if x1<x2: x1=x1+1

else if x1>x2: x1=x1­1

else x1=x1

if y1>y2: y1=y1­1

else if y1<y2 y1=y1+1

else y1=y1

else

#here player3 == loudest

if x1 < x3: x1 = x1 + 1

else if x1 > x3: x1 = x1 ­ 1

else x1 =x1

if y1>y3: y1=y1­1

else if y1<y3 y1=y1+1

else y1=y1

if x1 equals x2 and y1 equals y2: print “Player 2 is tagged. Game over” bool=False

if x1 equals x3 and y1 equals y3” print “Player 3 is tagged. Game Over” bool= False