Lab #5

Programming and Algorithms

Please complete all of the following questions:

1. The following Python program prints out the number 2 to 100 and indicates whether they are prime numbers or not.

|  |
| --- |
| # PROGRAM CheckFirst100Primes:for a in range(2, 101): b = a - 1 IsPrime = True while b != 1: # DO if a % b == 0: # THEN IsPrime = False # ENDIF; b = b - 1 # ENDWHILE; if IsPrime == True: # THEN print(a, "is a prime number") else: print(a, "is not a prime number") # ENDIF;# ENDFOR# END. |

Modify the above program to just print out the prime numbers as follows:

|  |
| --- |
| 2 is a prime number3 is a prime number5 is a prime number7 is a prime number11 is a prime number13 is a prime number17 is a prime number19 is a prime number23 is a prime number29 is a prime number31 is a prime number37 is a prime number41 is a prime number43 is a prime number47 is a prime number53 is a prime number59 is a prime number61 is a prime number67 is a prime number71 is a prime number73 is a prime number79 is a prime number83 is a prime number89 is a prime number97 is a prime number |

1. Explain in 350-500 words what the following Python program does:

|  |
| --- |
| # PROGRAM PrimeProgram:TwinValue = 1for a in range(2, 1001): b = a - 1 IsPrime = True while b != 1: # DO if a % b == 0: # THEN IsPrime = False # ENDIF; b = b - 1 # ENDWHILE; if IsPrime == True: # THEN if (a == TwinValue + 2): print(TwinValue, a) TwinValue = a # ENDIF;# ENDFOR # END. |

1. Write a Python program to print out the first 25 Fibonacci numbers.
2. Write a Python program to print out the first 25 Fibonacci numbers, indicating which are prime numbers and which are not, as follows:

|  |
| --- |
| 1 is a prime number1 is a prime number2 is a prime number3 is a prime number5 is a prime number8 is not a prime number13 is a prime number21 is not a prime number34 is not a prime number55 is not a prime number89 is a prime number144 is not a prime number233 is a prime number377 is not a prime number610 is not a prime number987 is not a prime number1597 is a prime number2584 is not a prime number4181 is not a prime number6765 is not a prime number10946 is not a prime number17711 is not a prime number28657 is a prime number46368 is not a prime number75025 is not a prime number121393 is not a prime number |

|  |
| --- |
| e-mail me a completed solution to each of the above programs in a Word document, and include Labs #1-#4 in this document also. e-mail to Damian.Gordon@dit.ie with subject heading “DT255 PaA Lab #1-5” |