*Logic Specification Template*

|  |  |  |  |
| --- | --- | --- | --- |
| **Student** | Gerardo Aldair Ponce Gomez | **Program #** | 6 |

|  |  |
| --- | --- |
| **Class Name** | CalcularP |

|  |  |
| --- | --- |
| **Method Name** | calculaGamma |

|  |  |
| --- | --- |
| **Parameters** | x: double |
|  |  |
|  |  |
|  |  |
|  |  |

|  |
| --- |
| If x ==1 |
| Regresa 1 |
| Else x == 0.5 |
| Return raiz de pi |
| Else |
| Llamada recursiva |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **Class Name** | CalcularP |

|  |  |
| --- | --- |
| **Method Name** | calculaValor |

|  |  |
| --- | --- |
| **Parameters** | x: double |
|  | dof: int |
|  |  |
|  |  |
|  |  |

|  |
| --- |
| xi = 0 |
| W = x/numseg |
| step1, step2, aux |
| fx = 0 |
| Vector myvector |
| num\_seg= 10 |
| Gamma = calculaGamma(x) |
| distT = Se calcula totalmente gamma |
| Ciclo for hasta numero de segmentos{ |
| Xi = W \* i |
| Step1 = Se calcula primera parte de t |
| Aux = Guarda el calculo de la potencia |
| Step2 = pow(step1,aux) |
| Fx = gamma \* step2 |
| Se meten datos al vector |
| } |
| Double acum4 = 0 |
| Ciclo for de 2 en 2 { |
| Aux = Agarra los valores del vector y los multiplica por 4 |
| acumulador |
| } |
| Double acum2 = 0 |
| Ciclo for de 2 en 2{ |
| Aux = Agarra los valores del vector y los multiplica por 2 |
| acumulador |
| } |
| Double P = 0 |
| Aux = W/3 |
| P= Calcula la ecuación final |
| Regresa valor p |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **Class Name** | Imprimir |

|  |  |
| --- | --- |
| **Method Name** | imprimeResultados |

|  |  |
| --- | --- |
| **Parameters** | N: float |
|  | k: float |
|  | R: float |
|  | RR: float |
|  | B0: float |  |
|  | B1: float |  |
|  | YK: float |  |
|  | signi: float |  |
|  | Rango: float |  |
|  | LS: float |  |
|  | LI: float |  |

|  |  |  |
| --- | --- | --- |
| Imprime N | | |
| Imprimei K | | |
| Imprime R | | |
| Imprime RR | | |
| Imprime B0 | | |
| Imprime B1 | | |
| Imprime YK | | |
| Imprime signi | | |
| Imprime rango | | |
| Imprime LS | | |
| Imprime LI | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
| **Class Name** | | Imprimir |

|  |  |
| --- | --- |
| **Method Name** | imprimeNoexiste |

|  |  |
| --- | --- |
| **Parameters** |  |
|  |  |
|  |  |
|  |  |
|  |  |

|  |
| --- |
| Imprime mensaje de error |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **Class Name** | Imprimir |

|  |  |
| --- | --- |
| **Method Name** | imprimeErrorpDof |

|  |  |
| --- | --- |
| **Parameters** |  |
|  |  |
|  |  |
|  |  |
|  |  |

|  |
| --- |
| Imprime mensaje de error |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **Class Name** | Imprimir |

|  |  |
| --- | --- |
| **Method Name** | imprimeMayor0 |

|  |  |
| --- | --- |
| **Parameters** |  |
|  |  |
|  |  |
|  |  |
|  |  |

|  |
| --- |
| Imprime mensaje de error |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **Class Name** | Lectora |

|  |  |
| --- | --- |
| **Method Name** | Lectora |

|  |  |
| --- | --- |
| **Parameters** | Nombre: string |
|  |  |
|  |  |
|  |  |
|  |  |

|  |
| --- |
| Abre el archivo |
| Inicializa variables en 0 |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **Class Name** | Lectora |

|  |  |
| --- | --- |
| **Method Name** | getxK |

|  |  |
| --- | --- |
| **Parameters** |  |
|  |  |
|  |  |
|  |  |
|  |  |

|  |
| --- |
| Retorna el valor de xK |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **Class Name** | Lectora |

|  |  |
| --- | --- |
| **Method Name** | getTotales |

|  |  |
| --- | --- |
| **Parameters** |  |
|  |  |
|  |  |
|  |  |
|  |  |

|  |
| --- |
| Retorna el valor totales |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **Class Name** | Lectora |

|  |  |
| --- | --- |
| **Method Name** | existeArchivo |

|  |  |
| --- | --- |
| **Parameters** |  |
|  |  |
|  |  |
|  |  |
|  |  |

|  |
| --- |
| IF archivo abierto |
| Regresa true |
| Else |
| Regresa false |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **Class Name** | Lectora |

|  |  |
| --- | --- |
| **Method Name** | vacioArchivo |

|  |  |
| --- | --- |
| **Parameters** |  |
|  |  |
|  |  |
|  |  |
|  |  |

|  |
| --- |
| Imprime mensaje de archivo vacio |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **Class Name** | Lectora |

|  |  |
| --- | --- |
| **Method Name** | Error0 |

|  |  |
| --- | --- |
| **Parameters** |  |
|  |  |
|  |  |
|  |  |
|  |  |

|  |
| --- |
| Retorna el valor de error |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **Class Name** | Lectora |

|  |  |
| --- | --- |
| **Method Name** | contar |

|  |  |
| --- | --- |
| **Parameters** | Numy: vector <float> |
|  | Numx: vector <float> |
|  |  |
|  |  |
|  |  |

|  |
| --- |
| Inicializa variables |
| Ciclo while para leer archivo |
| Lee la primera linea |
| If para saber si es primera linea{ |
| Cambia valor de error |
| Aumenta el numero de líneas |
| Cambia variable vacio |
| Imprime mensaje vacio |
| } |
| Aumenta numero de linea |
| If para saber si es el primer renglón{ |
| Agarra el valor del primer renglon |
| Aumenta el numero de renglones |
| Verifica que el dato sea valido |
| } |
| Else if para verificar que no sea el primer renglón{ |
| Lee la linea y substrae los dos valores |
| Verifica que los valores sean correctos |
| Aumenta el numero de líneas |
| } |
| } |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **Class Name** | Significancia |

|  |  |
| --- | --- |
| **Method Name** | CalculaX |

|  |  |
| --- | --- |
| **Parameters** | Corre: float |
|  | Correa2: float |
|  | N: float |
|  |  |
|  |  |

|  |
| --- |
| Iniciar variables |
| Sacaras raiz cuadrada de n-2 |
| Sacar raíz cuadrada de 1 – correa2 |
| Calcular x con el valor de las raíces calculas por el absoluto de corre |
| Retornar corre |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **Class Name** | Significancia |

|  |  |
| --- | --- |
| **Method Name** | calcuSigni |

|  |  |
| --- | --- |
| **Parameters** | P: float |
|  |  |
|  |  |
|  |  |
|  |  |

|  |
| --- |
| Iniciar varible auxiliar |
| Calculary significancia con la formula |
| Retornar significancia |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **Class Name** | Rango |

|  |  |
| --- | --- |
| **Method Name** | desviacionStandar |

|  |  |
| --- | --- |
| **Parameters** | N: float |
|  | B0: float |
|  | B1: float |
|  | NumX: vector<float> |
|  | NumY: vector<float> |

|  |
| --- |
| Inicializa variables |
| Ciclo for I hasta N{ |
| Se calcula la sumatoria de la ecuación |
| } |
| Se calcula el 1 / (n-2) |
| Se multiplican las dos partes de la ecuación |
| Se saca raíz cuadrada del resultado |
| Se retorna el valor de la raiz |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **Class Name** | Rango |

|  |  |
| --- | --- |
| **Method Name** | Promx |

|  |  |
| --- | --- |
| **Parameters** | Numx: vector <float> |
|  |  |
|  |  |
|  |  |
|  |  |

|  |
| --- |
| Se inicializa acumulador y auxiliar |
| Se calcula el tamaño del vector |
| Ciclo for 0 hasta el tamaño del vector{ |
| Se guardan los valores y se suman en un acumulador |
| } |
| Se divide el acumulador entre el tamaño del vector |
| Se retorna el promedio obtenido |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **Class Name** | Rango |

|  |  |
| --- | --- |
| **Method Name** | Rango |

|  |  |
| --- | --- |
| **Parameters** | distT: float |
|  | Desviacion: float |
|  | N: float |
|  | xK: float |
|  | aveX: float  Numx: vector<float> |

|  |
| --- |
| Se inicializan variables y se obtiene el tamaño del vector |
| Ciclo for de 0 al tamaño del vector{ |
| Se calcula la sumatoria |
| } |
| Se inicializan variables para el calculo |
| Se calcula la parte del denominador de la ecuación |
| Se calcula 1/N |
| Se juntan las partes de la ecuación |
| Se retorna el valor del rango |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **Class Name** | Rango |

|  |  |
| --- | --- |
| **Method Name** | rangoLS |

|  |  |
| --- | --- |
| **Parameters** | Yk: float |
|  | Rango: float |
|  |  |
|  |  |
|  |  |

|  |
| --- |
| Se calcula el valor del rango superior |
| Se retorna el valor del rango calculado |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **Class Name** | Rango |

|  |  |
| --- | --- |
| **Method Name** | rangoLI |

|  |  |
| --- | --- |
| **Parameters** | Yk: float |
|  | Rango: float |
|  |  |
|  |  |
|  |  |

|  |
| --- |
| Se calcula el valor del rango inferior |
| If para saber si el rango > 0{ |
| Retorna el rango |
| } |
| Else { |
| Retorna el rango como 0 |
| } |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **Class Name** | main |

|  |  |
| --- | --- |
| **Method Name** | main |

|  |  |
| --- | --- |
| **Parameters** |  |
|  |  |

|  |
| --- |
| Se solicita el nombre del archivo |
| Se crean los objetos de las diferentes clases |
| Se inicializan variables |
| If para saber si el archivo existe{ |
| Se manda a calcular los valores:   * Correlación * Regresión * Totales * Xk * B0 * B1 * yk |
| } |
| Else { |
| Se manda a imprimir el mensaje de error |
| } |
| Se crea el objeto significancia |
| Se manda a calcular el valor de x |
| Se inicializan las variables con los valores correspondientes |
| Ciclo do while que se repite hasta satisfacer el error minimo{ |
| Se calcula el valor de p n veces hasta que cumpla la condición |
| } |
| Se manda a calcular la significancia con el valor de p |
| If que verifica que el valor de p este en los márgenes indicados{ |
| Ciclo while que verifica el error de p{ |
| If para saber si p es menor que el p solicitado{ |
| Se desplaza x |
| Se vuelve a calcular el valor de p |
| Se cambia la dirección |
| } |
| Else que p es mayor que el p solicitado { |
| Se desplaza x |
| Se vuelve a calcular el valor de p |
| Se le asigna una dirección |
| } |
| Se calcula la diferencia de las p calculadas |
| Se comprueba el cambio de direccion |
| Se guarda la dirección actual |
| } |
| } |
| Else { |
| Se imprime mensaje de error |
| } |
| Se manda a calcular la desviación, promedio de x y los rangos |
| If que comprueba si hubo dato invalido { |
| Se manda a imprimir mensaje de error |
| } |
| If que comprueba si el archivo esta vacio{ |
| Si no esta vacio se manda a imprimir los resultados |
| } |

|  |  |
| --- | --- |
| **Class Name** | Calcular |

|  |  |
| --- | --- |
| **Method Name** | getx |

|  |  |
| --- | --- |
| **Parameters** |  |
|  |  |
|  |  |
|  |  |
|  |  |

|  |
| --- |
| Retorna el valor de x |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **Class Name** | Calcular |

|  |  |
| --- | --- |
| **Method Name** | Gety |

|  |  |
| --- | --- |
| **Parameters** |  |
|  |  |
|  |  |
|  |  |
|  |  |

|  |
| --- |
| Retorna el valor de y |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **Class Name** | Calcular |

|  |  |
| --- | --- |
| **Method Name** | getcorrelation |

|  |  |
| --- | --- |
| **Parameters** |  |
|  |  |
|  |  |
|  |  |
|  |  |

|  |
| --- |
| Retorna el valor de la correlacion |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **Class Name** | Calcular |

|  |  |
| --- | --- |
| **Method Name** | Getb0 |

|  |  |
| --- | --- |
| **Parameters** |  |
|  |  |
|  |  |
|  |  |
|  |  |

|  |
| --- |
| Retorna el valor de b0 |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **Class Name** | Calcular |

|  |  |
| --- | --- |
| **Method Name** | Getb1 |

|  |  |
| --- | --- |
| **Parameters** |  |
|  |  |
|  |  |
|  |  |
|  |  |

|  |
| --- |
| Retorna el valor de b1 |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **Class Name** | Calcular |

|  |  |
| --- | --- |
| **Method Name** | sumatorias |

|  |  |
| --- | --- |
| **Parameters** | NumX: float |
|  | NumY: float |
|  | N: int |
|  |  |
|  |  |

|  |
| --- |
| Ciclo for de 0 hasta N{ |
| Se calcula x |
| Se calcula y |
| Se calcula xx |
| Se calcula yy |
| Se calcula xy |
| } |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **Class Name** | Calcular |

|  |  |
| --- | --- |
| **Method Name** | Correlacion |

|  |  |
| --- | --- |
| **Parameters** | NumX: float |
|  | NumY: float |
|  | N: int |
|  |  |
|  |  |

|  |
| --- |
| Se manda a llamar la funcion sumatorias |
| Se calcula la correlación con la formula |
| Se regresa el valor de la correlacion |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |

|  |  |
| --- | --- |
| **Class Name** | Calcular |

|  |  |
| --- | --- |
| **Method Name** | regresion |

|  |  |
| --- | --- |
| **Parameters** | NumX: float |
|  | NumY: float |
|  | N: int |
|  |  |
|  |  |

|  |
| --- |
| Se calcula el valor de b1 |
| Se calcula el valor de b0 |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |
|  |