Appendix

Content of the Appendix is published in (E2).
Appendix

The classical Fibonacci sequence is a unique and fascinating string of numbers with interesting properties which are obtained by using various Mathematical techniques. In (P1), $B$-Tribonacci sequence and its identities are discussed. We give here some Python programming codes which are used for verifying the identities obtained.

*Python code for generating the terms of*

$$(t^B)_{n+2} = a^2(t^B)_{n+1} + 2ab(t^B)_n + b^2(t^B)_{n-1}.$$  

**Python Code 1.**

```python
from sympy import *
from pylab import *

a=Symbol('a')
b=Symbol('b')
def B(n):
    if n == 0:
        return 0
    elif n == 1:
        return 0
    elif n==2:
        return 1
    elif n<=0:
        return expand(1/b**2)*((B(n+3)-a**2*B(n+2)-2*a*b*B(n+1)))
    else :
        return expand(a**2*B(n-1)+2*a*b*B(n-2)+b**2*B(n-3))

for i in range (0,15):
    print 'B(',i,')=',B(i)
```

177
Python code for generating the graph of

\( (tB)_{n+2} = \left( \frac{1}{2} \right)^2 (tB)_{n+1} + 2 \left( \frac{1}{2} \right) (tB)_n + \left( \frac{1}{2} \right)^2 (tB)_{n-1}. \)

**Python Code 2.**

```python
from sympy import *
from pylab import *

a = Symbol('a')
b = Symbol('b')
a = 1/2.0
b = 1/2.0
def B(n):
    if n == 0:
        return 0
    elif n == 1:
        return 0
    elif n == 2:
        return 1
    elif n <= 0:
        return expand(1/b**2)*((B(n+3)-a**2*B(n+2)-2*a*b*B(n+1)))
    else:
        return expand(a**2*B(n-1)+2*a*b*B(n-2)+b**2*B(n-3))

for i in range(0,15):
    scatter(i, float64(B(i)))
grid(True)
xlabel(r'$n$', fontsize=18)
ylabel(r'$B_n$', fontsize=18)
show()
```
Python code for generating the terms of B-q bonacci sequence for \( q \geq 2 \) and \( n \geq 0 \).

**Python Code 3.**

```python
from numpy import *
from math import *
from pylab import *
from sympy import *
a=Symbol('a')
b=Symbol('b')

q=input('Enter q')

def B(n):
    if n <= q-2 :
        return 0
    elif n == q-1:
        return 1
    elif n > q-1 :
        sum=0
        for r in range (q):
            sum=sum+ expand(binomial(q-1,r)*a**(q-1-r)*b**r*B(n-1-r))
        return sum
    else :
        print 'Exit'
```

179
List of Publications

(A) Papers Published


(P3) S. Arolkar and Y.S. Valaulikar, *$h(x)$-B-Tribonacci and $h(x)$-B-Tri Lucas Polynomials*, Kyungpook Mathematical Journal, 56(4)(2016), 1125-1133.


(B) Papers Communicated

(C1) S. Arolkar and Y.S. Valaulikar, *Identities Involving Partial Derivatives of Bivariate B-q bonacci and B-q Lucas Polynomials*.

(C) Papers presented and published in conference proceedings


(D) Papers presented at the National conferences

(1) Attended and presented the paper entitled ‘On an Extension of Fibonacci sequence’ at the National conference on ‘Recent Advances in Mathematics’ held during 23-25 the Dec, 2014 at Dept. of Mathematics Deogiri College, Aurangabad. This is a published paper (P1).

(2) Attended and presented a paper entitled ‘Hyers-Ulam Stability of Generalized Tribonacci Functional Equation \( f(x) = af(x-1)+bf(x-2)+cf(x-3) \) at the National conference on ‘Emerging Trends in Mathematics and Mathematical Sciences’ held during 17-19 th Dec, 2015 at Calcutta Mathematical Society, Kolkata. This is a published paper (P5).
Bibliography


