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Interpolation Polynomial with Perl

Contoh Input/Output

Format input:

```
n
x1 y1
x2 y2
...
xn yn
xn+1 yn+1
```

Format output:

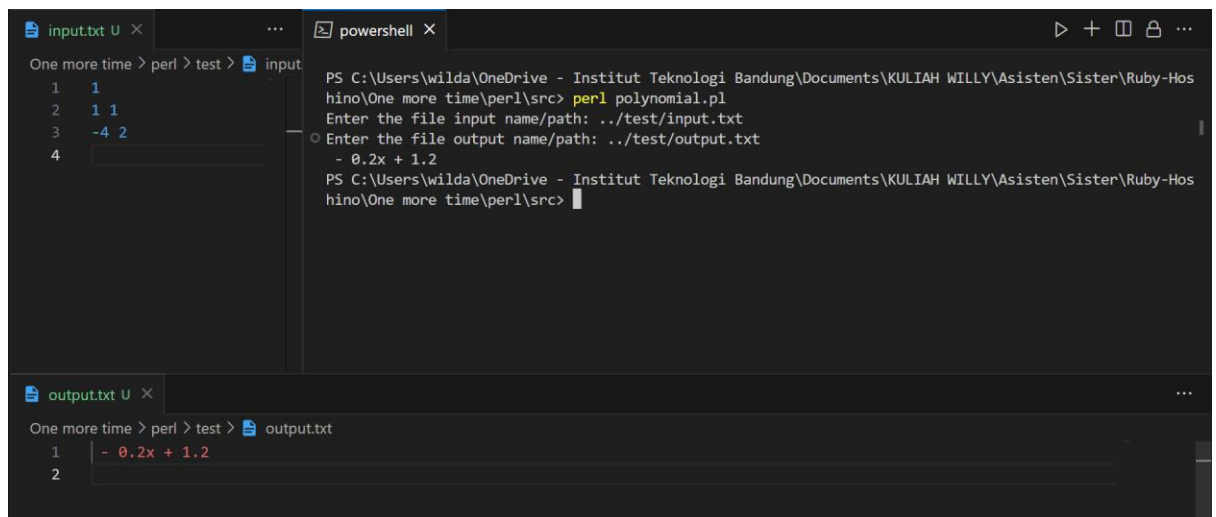
```
ax^n + bx^{n-1} + ... + px + q
```

yang berarti $y = ax^n + bx^{n-1} + \dots + px + q$

dengan ^ merupakan pangkat yang berarti $ax^{**n} = ax^n$

Jumlah titik = $N + 1$

1. $N = 1$



The screenshot shows a Windows PowerShell window and a file explorer. The PowerShell window displays the execution of a Perl script named 'polynomial.pl'. The script prompts for an input file path and an output file path. The input file path is set to './test/input.txt' and the output file path is set to './test/output.txt'. The script then reads the input file, which contains the following data:

```
1 1
2 1 1
3 -4 2
4
```

The script outputs the interpolation polynomial to the output file, which is displayed as:

```
1 - 0.2x + 1.2
2
```

2. $N = 2$

```
input.txt U x
One more time > perl > test > input
1 2
2 1 2
3 2 3
4 3 4

powershell x
PS C:\Users\wilda\OneDrive - Institut Teknologi Bandung\Documents\KULIAH WILLY\Asisten\Sister\Ruby-Hos
hino\One more time\perl\src> perl polynomial.pl
Enter the file input name/path: ../test/input.txt
Enter the file output name/path: ../test/output.txt
- 0.2x + 1.2
PS C:\Users\wilda\OneDrive - Institut Teknologi Bandung\Documents\KULIAH WILLY\Asisten\Sister\Ruby-Hos
hino\One more time\perl\src> perl polynomial.pl
Enter the file input name/path: ../test/input.txt
Enter the file output name/path: ../test/output.txt
1x + 1
PS C:\Users\wilda\OneDrive - Institut Teknologi Bandung\Documents\KULIAH WILLY\Asisten\Sister\Ruby-Hos
hino\One more time\perl\src>

output.txt U x
One more time > perl > test > output.txt
1 1x + 1
2
```

3. $N = 2$

```
input.txt U x
One more time > perl > test > input
1 2
2 1 2
3 2 3
4 3 5

powershell x
Enter the file input name/path: ../test/input.txt
Enter the file output name/path: ../test/output.txt
- 0.2x + 1.2
PS C:\Users\wilda\OneDrive - Institut Teknologi Bandung\Documents\KULIAH WILLY\Asisten\Sister\Ruby-Hos
hino\One more time\perl\src> perl polynomial.pl
Enter the file input name/path: ../test/input.txt
Enter the file output name/path: ../test/output.txt
1x + 1
PS C:\Users\wilda\OneDrive - Institut Teknologi Bandung\Documents\KULIAH WILLY\Asisten\Sister\Ruby-Hos
hino\One more time\perl\src> perl polynomial.pl
Enter the file input name/path: ../test/input.txt
Enter the file output name/path: ../test/output.txt
0.5x^2 - 0.5x + 2
PS C:\Users\wilda\OneDrive - Institut Teknologi Bandung\Documents\KULIAH WILLY\Asisten\Sister\Ruby-Hos
hino\One more time\perl\src>

output.txt U x
One more time > perl > test > output.txt
1 0.5x^2 - 0.5x + 2
2
```

4. $N = 3$

```
input.txt U x
One more time > perl > test > input
1 3
2 1 1
3 2 4
4 3 9
5 4 16
6

powershell x
Enter the file input name/path: ../test/input.txt
Enter the file output name/path: ../test/output.txt
1x + 1
PS C:\Users\wilda\OneDrive - Institut Teknologi Bandung\Documents\KULIAH WILLY\Asisten\Sister\Ruby-Hos
hino\One more time\perl\src> perl polynomial.pl
Enter the file input name/path: ../test/input.txt
Enter the file output name/path: ../test/output.txt
0.5x^2 - 0.5x + 2
PS C:\Users\wilda\OneDrive - Institut Teknologi Bandung\Documents\KULIAH WILLY\Asisten\Sister\Ruby-Hos
hino\One more time\perl\src> perl polynomial.pl
Enter the file input name/path: ../test/input.txt
Enter the file output name/path: ../test/output.txt
1x^2
PS C:\Users\wilda\OneDrive - Institut Teknologi Bandung\Documents\KULIAH WILLY\Asisten\Sister\Ruby-Hos
hino\One more time\perl\src>

output.txt U x
One more time > perl > test > output.txt
1 1x^2
2
```

5. $N = 3$

```

input.txt U x
One more time > perl > test > input
1 3
2 1 2
3 2 3
4 3 4
5 4 5

powershell x
Enter the file input name/path: ../test/input.txt
Enter the file output name/path: ../test/output.txt
0.5x^2 - 0.5x + 2
PS C:\Users\wilda\OneDrive - Institut Teknologi Bandung\Documents\KULIAH WILLY\Asisten\Sister\Ruby-Hos
hino\One more time\perl\src> perl polynomial.pl
Enter the file input name/path: ../test/input.txt
Enter the file output name/path: ../test/output.txt
1x^2
PS C:\Users\wilda\OneDrive - Institut Teknologi Bandung\Documents\KULIAH WILLY\Asisten\Sister\Ruby-Hos
hino\One more time\perl\src> perl polynomial.pl
Enter the file input name/path: ../test/input.txt
Enter the file output name/path: ../test/output.txt
1x + 1
PS C:\Users\wilda\OneDrive - Institut Teknologi Bandung\Documents\KULIAH WILLY\Asisten\Sister\Ruby-Hos
hino\One more time\perl\src>

output.txt U x
One more time > perl > test > output.txt
1 1x + 1
2

```

6. $N = 3$

```

input.txt U x
One more time > perl > test > input
1 3
2 1 10
3 2 2
4 3 5
5 4 1

powershell x
Enter the file input name/path: ../test/input.txt
Enter the file output name/path: ../test/output.txt
1x^2
PS C:\Users\wilda\OneDrive - Institut Teknologi Bandung\Documents\KULIAH WILLY\Asisten\Sister\Ruby-Hos
hino\One more time\perl\src> perl polynomial.pl
Enter the file input name/path: ../test/input.txt
Enter the file output name/path: ../test/output.txt
1x + 1
PS C:\Users\wilda\OneDrive - Institut Teknologi Bandung\Documents\KULIAH WILLY\Asisten\Sister\Ruby-Hos
hino\One more time\perl\src> perl polynomial.pl
Enter the file input name/path: ../test/input.txt
Enter the file output name/path: ../test/output.txt
- 3x^3 + 23.5x^2 - 57.5x + 47
PS C:\Users\wilda\OneDrive - Institut Teknologi Bandung\Documents\KULIAH WILLY\Asisten\Sister\Ruby-Hos
hino\One more time\perl\src>

output.txt U x
One more time > perl > test > output.txt
1 - 3x^3 + 23.5x^2 - 57.5x + 47
2

```

7. $N = 4$

```

input.txt U x
One more time > perl > test > input
1 4
2 0 1
3 1 1
4 2 1
5 3 1
6 4 1

powershell x
Enter the file input name/path: ../test/input.txt
Enter the file output name/path: ../test/output.txt
1x + 1
PS C:\Users\wilda\OneDrive - Institut Teknologi Bandung\Documents\KULIAH WILLY\Asisten\Sister\Ruby-Hos
hino\One more time\perl\src> perl polynomial.pl
Enter the file input name/path: ../test/input.txt
Enter the file output name/path: ../test/output.txt
- 3x^3 + 23.5x^2 - 57.5x + 47
PS C:\Users\wilda\OneDrive - Institut Teknologi Bandung\Documents\KULIAH WILLY\Asisten\Sister\Ruby-Hos
hino\One more time\perl\src> perl polynomial.pl
Enter the file input name/path: ../test/input.txt
Enter the file output name/path: ../test/output.txt
1
PS C:\Users\wilda\OneDrive - Institut Teknologi Bandung\Documents\KULIAH WILLY\Asisten\Sister\Ruby-Hos
hino\One more time\perl\src>

output.txt U x
One more time > perl > test > output.txt
1 1
2

```

8. N = 4

```

input.txt U x  ...  powershell x
One more time > perl > test > input
1 4
2 0 0
3 1 0
4 2 0
5 3 0
6 4 1

Enter the file input name/path: ../test/input.txt
Enter the file output name/path: ../test/output.txt
- 3x^3 + 23.5x^2 - 57.5x + 47
PS C:\Users\wilda\OneDrive - Institut Teknologi Bandung\Documents\KULIAH WILLY\Asisten\Sister\Ruby-Hos
hino\One more time\perl\src> perl polynomial.pl
Enter the file input name/path: ../test/input.txt
Enter the file output name/path: ../test/output.txt
1
PS C:\Users\wilda\OneDrive - Institut Teknologi Bandung\Documents\KULIAH WILLY\Asisten\Sister\Ruby-Hos
hino\One more time\perl\src> perl polynomial.pl
Enter the file input name/path: ../test/input.txt
Enter the file output name/path: ../test/output.txt
0.041666666666667x^4 - 0.25x^3 + 0.458333333333333x^2 - 0.25x
PS C:\Users\wilda\OneDrive - Institut Teknologi Bandung\Documents\KULIAH WILLY\Asisten\Sister\Ruby-Hos
hino\One more time\perl\src>

output.txt U x
One more time > perl > test > output.txt
1 0.041666666666667x^4 - 0.25x^3 + 0.458333333333333x^2 - 0.25x
2

```

9. N = 7

```

input.txt U x  ...  powershell x
One more time > perl > test > input
1 7
2 0 0
3 1 0
4 2 0
5 3 0
6 4 1
7 5 1
8 6 1
9 7 1

Enter the file output name/path: ../test/output.txt
1
PS C:\Users\wilda\OneDrive - Institut Teknologi Bandung\Documents\KULIAH WILLY\Asisten\Sister\Ruby-Hos
hino\One more time\perl\src> perl polynomial.pl
Enter the file input name/path: ../test/input.txt
Enter the file output name/path: ../test/output.txt
0.041666666666667x^4 - 0.25x^3 + 0.458333333333333x^2 - 0.25x
PS C:\Users\wilda\OneDrive - Institut Teknologi Bandung\Documents\KULIAH WILLY\Asisten\Sister\Ruby-Hos
hino\One more time\perl\src> perl polynomial.pl
Enter the file input name/path: ../test/input.txt
Enter the file output name/path: ../test/output.txt
- 0.00396825396825397x^7 + 0.097222222222222x^6 - 0.936111111111111x^5 + 4.4722222222222x^4 - 10.98
611111111111x^3 + 12.9305555555556x^2 - 5.57380952380952x
PS C:\Users\wilda\OneDrive - Institut Teknologi Bandung\Documents\KULIAH WILLY\Asisten\Sister\Ruby-Hos
hino\One more time\perl\src>

output.txt U x
One more time > perl > test > output.txt
1 - 0.00396825396825397x^7 + 0.097222222222222x^6 - 0.936111111111111x^5 + 4.4722222222222x^4 - 10.9861111111111
2

```

10. N = 10

```

input.txt U x  ...  powershell x
One more time > perl > test > input
1 10
2 1 10
3 2 2
4 3 5
5 4 1
6 6 1
7 -10 -10
8 0 0
9 18 100
10 -100 100
11 200 10
12 150 -150

PS C:\Users\wilda\OneDrive - Institut Teknologi Bandung\Documents\KULIAH WILLY\Asisten\Sister\Ruby-Hos
hino\One more time\perl\src> perl polynomial.pl
Enter the file input name/path: ../test/input.txt
Enter the file output name/path: ../test/output.txt
- 0.00396825396825397x^7 + 0.097222222222222x^6 - 0.936111111111111x^5 + 4.4722222222222x^4 - 10.98
611111111111x^3 + 12.9305555555556x^2 - 5.57380952380952x
PS C:\Users\wilda\OneDrive - Institut Teknologi Bandung\Documents\KULIAH WILLY\Asisten\Sister\Ruby-Hos
hino\One more time\perl\src> perl polynomial.pl
Enter the file input name/path: ../test/input.txt
Enter the file output name/path: ../test/output.txt
- 8.2157632300938e-10x^10 + 2.23649328079961e-07x^9 - 4.59658454159432e-07x^8 - 0.0025565895341109x^7
+ 0.0551728904148103x^6 - 0.0059764253984915x^5 - 4.59092847576043x^4 + 28.332063291449x^3 - 63.31933
68593863x^2 + 49.5315624050462x
PS C:\Users\wilda\OneDrive - Institut Teknologi Bandung\Documents\KULIAH WILLY\Asisten\Sister\Ruby-Hos
hino\One more time\perl\src>

output.txt U x
One more time > perl > test > output.txt
1 - 8.2157632300938e-10x^10 + 2.23649328079961e-07x^9 - 4.59658454159432e-07x^8 - 0.0025565895341109x^7 + 0.055172
2

```