

BBM104 ASSIGNMENT1 REPORT

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Course : BBM104
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1.Aim

The assignment has three aim because of including three parts. First one is calculating integral of given function with given numbers, second one is calculating $\arcsin(x)$ function's value with given numbers and lastly, last aim is finding armstrong numbers between 0 and $10^{\text{given number}}$.

2.Software usage

- ✓ I used Eclipse as an IDE and also tested terminal. My java version is 1.8 jdk.
- ✓ Program includes three part which is IntegrateReimann, Arcsinh and Armstrong. In main function, methods are placed in if blocks.
- ✓ The process in main function is only reading file, choosing which method will be used and printing results.
- ✓ First part in main function includes IntegrateReimann() which takes function, lower limit, one part of partition and number of partition. If I need to tell Riemann sum, there are a lot of imaginary rectangular under function and the aim is find areas of this thin rectangulars to find all area.
 - Which function will be used is being choosing
 - if the choise is Func1 or Func2; in a loop which turns number of partition times, thin rectangular's x and y coordinates are calculating and the all area is finding with adding thin rectangulars using functions
 - if the choise is Func3; there is only one different process. To find rectangular's y-axis value, one loop which turns 30 times is using.
 - Finally IntegrateReimann() returns area which is program's output.

- ✓ Second part in main function includes Arcsinh() which takes given number (input). This function calculates arcsinh(x)'s value with given formula in a loop which turns 30 times.
 - orta_nokta_sum is a variable which stands for y-axis value of function arcsinh(x).
- ✓ Last part in main function include Armstrong() which takes given number (input).

3.Sample results

3.1.Input-output 1

input	output
IntegrateReimann Func1 -14 8 10	IntegrateRiemann Func1 -14 8 10 Result: 1208.46
IntegrateReimann Func1 -14 8 50	IntegrateRiemann Func1 -14 8 50 Result:
IntegrateReimann Func2 -5 15 10	1216.97840000000006
IntegrateReimann Func2 -5 15 50	IntegrateRiemann Func2 -5 15 10 Result:
IntegrateReimann Func3 -0.71 0.83 47	387.8240470418696
Arcsinh 0.006	IntegrateRiemann Func2 -5 15 50 Result:
Armstrong 6	388.332666438153
	IntegrateRiemann Func3 -0.71 0.83 47 Result:
	0.08508883708585001
	Arcsinh 0.006 Result: 0.005999964000583188
	Armstrong 6 Result: 0 1 2 3 4 5 6 7 8 9 153 370 371
	407 1634 8208 9474 54748 92727 93084 548834

3.2.Input-output 2

input	output
IntegrateReimann Func1 23 33 5	IntegrateRiemann Func1 23 33 5 Result: 7670.0
IntegrateReimann Func1 23 33 67	IntegrateRiemann Func1 23 33 67 Result:
IntegrateReimann Func2 88 89 5	7673.314769436383
IntegrateReimann Func2 88 89 67	IntegrateRiemann Func2 88 89 5 Result:
IntegrateReimann Func3 -0.15 0.45 45	6.9121885294364604
Arcsinh 0.6	IntegrateRiemann Func2 88 89 67 Result:
Armstrong 7	6.943761916400597
	IntegrateRiemann Func3 -0.15 0.45 45 Result:
	0.08840826638622418
	Arcsinh 0.6 Result: 0.568829867954679
	Armstrong 7 Result: 0 1 2 3 4 5 6 7 8 9 153 370 371
	407 1634 8208 9474 54748 92727 93084 548834
	1741725 4210818 9800817 9926315

3.3.Input-output 3

input	output
IntegrateReimann Func1 -7 64 5	IntegrateRiemann Func1 -7 64 5 Result:
IntegrateReimann Func1 -7 64 67	84492.12999999998
IntegrateReimann Func2 12 77 5	IntegrateRiemann Func1 -7 64 67 Result:
IntegrateReimann Func2 12 77 67	85678.52244375148
IntegrateReimann Func3 0.5 0.65 55	IntegrateRiemann Func2 12 77 5 Result:
Arcsinh 0.033	639.3630146748169
Armstrong 8	IntegrateRiemann Func2 12 77 67 Result:
	1308.4252634361414
	IntegrateRiemann Func3 0.5 0.65 55 Result:
	0.08203850667326643
	Arcsinh 0.033 Result: 0.032994013433253276
	Armstrong 8 Result: 0 1 2 3 4 5 6 7 8 9 153 370 371
	407 1634 8208 9474 54748 92727 93084 548834
	1741725 4210818 9800817 9926315 24678050
	24678051 88593477

4.Personal comments

When the assignment was given, I had finished in a few days and my code gave correct output according to first inputs but then inputs were changed and I had to change my code. The only difficulty I faced is rewriting my code.

I learned how to run java code in terminal.