CIS 441/541: Project #1B
Due 1159pm April 7th, 2021 (meaning 6am April 8th)
Worth 3% of your grade

Instructions
1) Download and build project1B.cxx. Re-use your CMakeLists.txt from project1A, and just replace “1A” with “1B”
2) Project1B.cxx contains a routine that will generate 100 triangles.
   a. All of these triangles have two points with the same X value and the third point with a greater X value (i.e., “going right” triangles)
3) Implement the scanline algorithm to these triangles and fill up the image buffer with their colors.
4) The correct image (100triangles.png) is posted to the website.

When you are done, upload your code to Canvas.

If your code does not produce exactly the same image, you should expect to get less than half credit. You can confirm that it produces the same image with the difference program and the reference image on the website (100triangles.png).

IMPORTANT: you should use “double” to get double precision (8 byte) floating type. The word “float” should not appear in your code. If you use float, then you will get mostly the right picture, but you will have ~30 pixels wrong.

Some notes:
1) I began my implementation by figuring out which vertex was which, i.e., which was top-left, which was bottom-left, and which was right
2) Some pixels may be outside the screen. Plan for that.
3) Don’t forget to use double precision and the floor_441 and ceil_441 functions.
4) Be careful about which quantities you want to be integers and which you want to be double precision.
5) What I printed when debugging:
   a. The triangle (I added a print method)
   b. Which vertices were which (top-left, bottom-left, right)
   c. The range of scanlines for a triangle
6) FINALLY: start by working on just a single triangle and get that working entirely. Then try all of the triangles at once. Below are my print statements for triangle 55.

Columns go from 500 to 560
For column 500, rows go from 500 to 599
For column 501, rows go from 502 to 598
For column 502, rows go from 503 to 598
For column 503, rows go from 504 to 597
For column 504, rows go from 505 to 597
For column 505, rows go from 506 to 596
For column 506, rows go from 507 to 596
For column 507, rows go from 509 to 595
For column 508, rows go from 510 to 595
For column 509, rows go from 511 to 594
For column 510, rows go from 512 to 594
For column 511, rows go from 513 to 593
For column 512, rows go from 514 to 593
For column 513, rows go from 516 to 592
For column 514, rows go from 517 to 592
For column 515, rows go from 518 to 591
For column 516, rows go from 519 to 591
For column 517, rows go from 520 to 590
For column 518, rows go from 521 to 590
For column 519, rows go from 523 to 589
For column 520, rows go from 524 to 589
For column 521, rows go from 525 to 588
For column 522, rows go from 526 to 588
For column 523, rows go from 527 to 587
For column 524, rows go from 528 to 587
For column 525, rows go from 530 to 586
For column 526, rows go from 531 to 586
For column 527, rows go from 532 to 585
For column 528, rows go from 533 to 585
For column 529, rows go from 534 to 584
For column 530, rows go from 535 to 584
For column 531, rows go from 537 to 584
For column 532, rows go from 538 to 583
For column 533, rows go from 539 to 583
For column 534, rows go from 540 to 582
For column 535, rows go from 541 to 582
For column 536, rows go from 542 to 581
For column 537, rows go from 544 to 581
For column 538, rows go from 545 to 580
For column 539, rows go from 546 to 580
For column 540, rows go from 547 to 579
For column 541, rows go from 548 to 579
For column 542, rows go from 549 to 578
For column 543, rows go from 551 to 578
For column 544, rows go from 552 to 577
For column 545, rows go from 553 to 577
For column 546, rows go from 554 to 576
For column 547, rows go from 555 to 576
For column 548, rows go from 556 to 575
For column 549, rows go from 558 to 575
For column 550, rows go from 559 to 574
For column 551, rows go from 560 to 574
For column 552, rows go from 561 to 573
For column 553, rows go from 562 to 573
For column 554, rows go from 563 to 572
For column 555, rows go from 565 to 572
For column 556, rows go from 566 to 571
For column 557, rows go from 567 to 571
For column 558, rows go from 568 to 570
For column 559, rows go from 569 to 570
For column 560, rows go from 570 to 570