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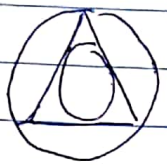
Assignment → 2

=> Problem statement → write a C++ program to draw inscribed and circumscribed circle in a triangle as shown. Use Bresenhams for outer circle and DDA for inner circle use any inner drawing algorithm.



=> Objectives → to be able to understand and implement different circles drawing algorithms

=> Outcome → To be able to generate complex shapes using circle drawing algorithms

=> ~~Pre~~ SW requirement → 64 bit OS. Qt creator

=> Theory → These are two main circles drawing algorithms

1) DDA → This algorithm consists of floating point update
→ It involves floating calculation
→ Simple to implement
→ It is heavier on the processor thus not implemented often

2) Bresenhams → This algorithm involves computation of an error term
→ Because of the error term, all calculation involved integral calculation.

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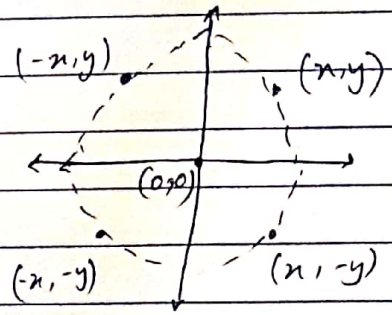
→ Procedure is tough to implement
→ It is much faster than DDA algorithm.

⇒ Advantages ⇒ DDA → easily implemented
→ easy to understand
→ only basic math knowledge required
⇒ Bresenhams → only integer calculation
→ much faster
→ No special function required to type cast

⇒ Disadvantages ⇒ Bresenhams → Complicated to understand
→ Cannot be drawn easily
⇒ DDA → floating point calculation
→ much slower running

→ During generation of a circle, we only one quadrant of the circle and draw its reflection along other quadrants as follows.



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=> Test cases

Input	Expected o/p	actual o/p
1) Radius of outer Circle = 50	Size of triangle = 87 Radius of inner Circle = 295	Sucess
2) radius of outer Circle = 100	size of the triagle = 173 radius of inner Circle = 100	Success

=> Conclution → Thus using DDA and Bresenhams algoritum, we were able to generate the given figure.