" النظري الخاص بمادة رسوم الحاسوب "

Q1/What's the basic primitives ?

1.Points that are uniquely defined by their x- and y-coordinate.

2. lines that can be defined by their two endpoints.

3. Lines, polylines or curves can be defined by two or more points.

4. Polylines are connected sequences of lines.

5. Areas are usually bounded by closed polylines or polygons. Areas can be filled with a color or a texture.

Q2/What's the *polyline ?*

A sequence of line where the following line starts where the previous one ends is called a polyline.

Q3/What's the polygon ?

If the last line segment of a polyline ends where the first line segment started, the polyline is called a polygon.

Q4/What's the Vector Graphics ?

• *Image is represented by continuous geometric objects: points, lines, curves, etc.*
• *Graphics objects: geometry + color*
• *Geometric transformation possible without loss of information (zoom, rotate, ...)*
• *Examples: PowerPoint, CorelDraw, AutoCAD...*

Q5/What's the Raster Graphics ?

• *Image is represented as an rectangular grid of colored squares*
• Image processing techniques
• Geometric Transformation: loss of information
• Realistic images, textures, ...
• Examples: Paint, PhotoShop
• Raster graphics are also sometimes called *bitmapped graphics*

Q6/What's the Difference Between DDA Line Drawing Algorithm and Bresenhams Line Drawing Algorithm ?

	Digital Differential Analyzer	Bresenhams Line Drawing Algorithm
Arithmetic	DDA algorithm uses floating points i.e. Real Arithmetic.	Bresenhams algorithm uses fixed points i.e. Integer Arithmetic.
Operations	DDA algorithm uses multiplication and division in its operations.	Bresenhams algorithm uses only subtraction and addition in its operations.
Speed	DDA algorithm is rather slowly than Bresenhams algorithm in line drawing because it uses real arithmetic (floating-point operations).	Bresenhams algorithm is faster than DDA algorithm in line drawing because it performs only addition and subtraction in its calculation and uses only integer arithmetic so it runs significantly faster.
Accuracy & Efficiency	DDA algorithm is not as accurate and efficient as Bresenham algorithm.	Bresenhams algorithm is more efficient and much accurate than DDA algorithm.
Drawing	DDA algorithm can draw circles and curves but that are not as accurate as Bresenhams algorithm.	Bresenhams algorithm can draw circles and curves with much more accuracy than DDA algorithm.
Round Off	DDA algorithm round off the coordinates to integer that is nearest to the line.	Bresenhams algorithm does not round off but takes the incremental value in its operation.
Expensive	DDA algorithm uses an enormous number of floating-point multiplications so it is expensive.	Bresenhams algorithm is less expensive than DDA algorithm as it uses only addition and subtraction.

Q7/What's the Bresenham algorithm ?

The Bresenham algorithm is another incremental scan conversion algorithm. The big advantage of this algorithm is that, it uses only integer calculations.

Q7/ What's the Simulation ?

It's made our geometric objects are the same on the paper and on computer screen .

Q8/What's the Translation ?

A translation transform simply moves every point by a certain amount horizontally and a certain amount vertically**.**

Q9/ What's the Scaling ?

A scaling transform can be used to make objects bigger or smaller.

Q10/What's the Rotation ?

Every point is rotated through the same angle, called the angle of rotation.