→ Canvas → Container for Graphics

* Draw ——→ Graphics → In ——→ web page ←— <canvas>
                      → on the fly ——→ via → Js

* Must use ——→ Js ——→ Draw graphics

* What It is ? ——→ Rectangular Area on, HTML Page → To use Style attr
                  → By default → No → Border   → Content

    → Markup

    <canvas id = "L" width="" height="">
    </canvas>
                For script Purposes   Size of Canvas

Eg :-
1)
```
<!DOCTYPE html>
<html>
   <head>
      <style>
         canvas{
            border : 1px solid black;
            margin-left: 30%.
            margin-top : 5%.
         }
      <style>
   <head>
   <body>
      <canvas id= "myfirstcanvas" width="600" height="400">
      </canvas>
   <body>
</html>
```
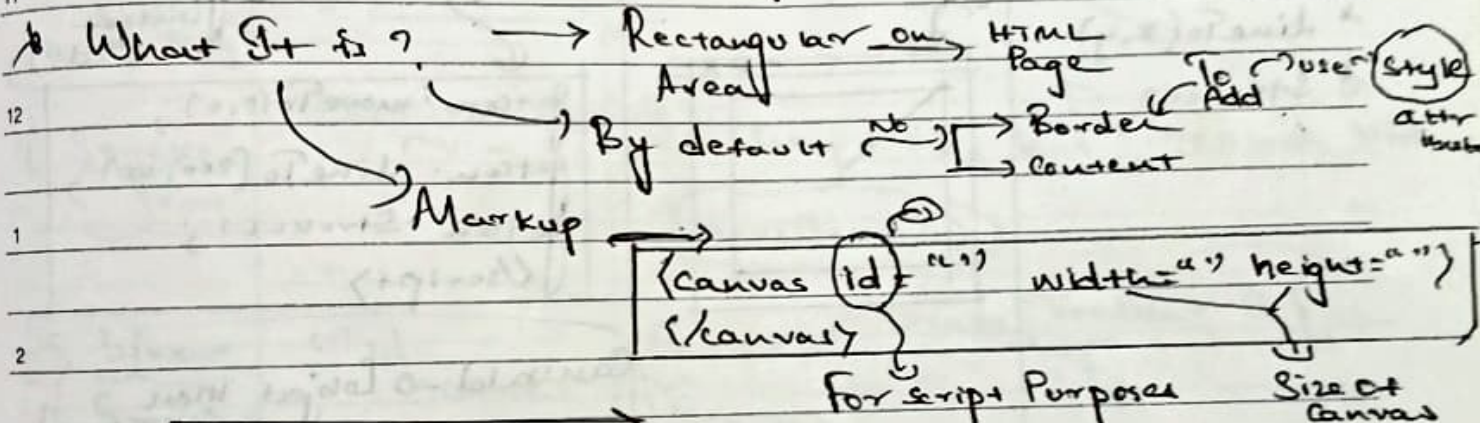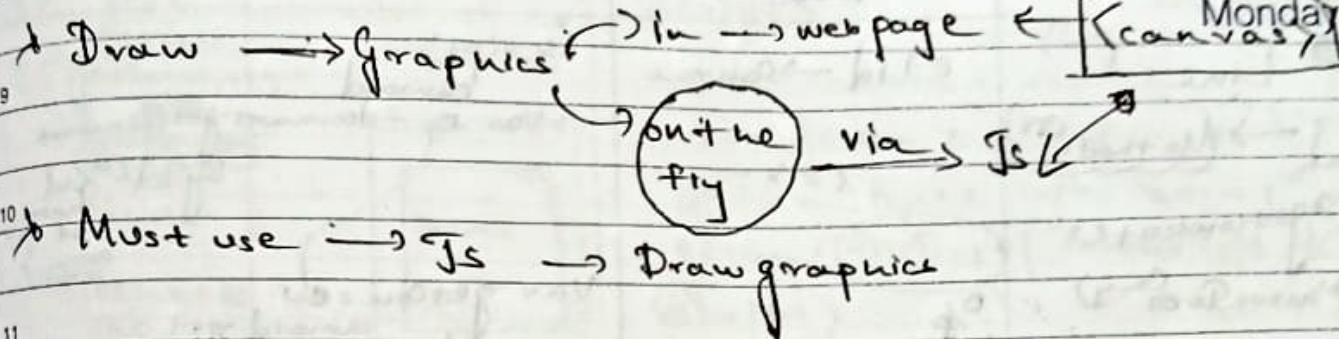
o/p :-   - □ x

Scenarios (7)

→ Line   1) Text → Text - stroke   1) circular gradient
                          Text

→ Circle   1) Linear gradient   1) Image

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Refer Basic Canvas fg also

FR HTML

Qc
HTML

1> Line

→ Methods (JS)

1) get Context()
2) moveTo(x,y)
3) lineTo(x,y)
4) stroke()

~) id → canvas

~ r ~

↑ OP

□PX

```
<script>
canvas.id
Var cv = document.getElementbyid("<id name of canvas>")

Var getcon = cv
                canvas.id.get
                context
                ("2d");

getcon.moveTo(0,0);
getcon.lineTo(200,100);
getcon.stroke();
</script>
```
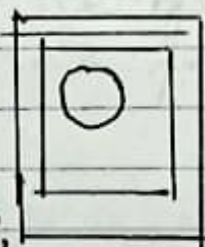
Canvas.id → [object HTML canvas element]

getcon → [object Canvas Rendering Context 2D]

2> Circle

() get Context()
() beginPath()
() arc(x,y,r,sAngle,eAngle)
            Radius
() stroke()

Start Angle   End Angle

~) optional
~) default → false
        ↓
    clockwise

() true →
      Counter clockwise

~) id ~ canvas

□ ○

```
<script>
var canvas.id = ___;
var getcon = ___;

getcon.beginPath();

getcon.arc(95,50,50,0,90, false);

getcon.stroke();
</script>
```

↗ Refer above

for 1st
2 lines of code

HTML   JS

3) **Text**
   Methods
   a) getContext()
   b) ~~properties~~
   c) font
   c) fillText
      ("Text",
       x,y)

4) **Stroke**
   Text

8) **Linear**
   Gradient

c) createLinearGradient
   ()

c) addColorStop()

d) fillStyle
e) fillRect()

6) Circular gradient
   ~ Same as
     linear
     gradient
   ~ But use
     method → instead of

a) Id
   ~ canvas

~ Dy

Canvas

~ Id at canvas
  ~ x —

~ Id
  ~ canvas

Create Radial gradient (?, ?, ?, ?, ?, ?)

```
<script>
  var canvaid = ~
  var getcon = ? . getcontext("2d") ;
  getcon . font = "20px rakeway" ;
  getcon . fillText ("Canvas", 46, 75) ;
</script>
```

In script of (Text) replace with
Stroke Text ()

~ Create Gradient & fill
                 1   2

```
<script>
<script>
  var canvaid = _____ ;
  var getcon = ? . getContext("2d") ;
  var creategrad = getCon . createLinearGradient
                                    (0,0,200,40)
  creategrad . addColorStop ("0", "black") ;
  creategrad . addColorStop ("1", "gyan") ;
  getcon . fillStyle = creategrad ;
  getcon . fillRect (10, 10, 150, 80) ;
</script>
```

a) ~~cost~~

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> Image ⌐) Image fill

⌐) get Context()   → drawImage (u, u, u)

HTML ⌐) <body> ⌐) | <body>

     <img id = "img" src = "ch.jpg" height
         = "1000 px"

     width = "1000 px" />

<button onclick = "fillImage()"> Fill </button>

<canvas id = "can" width = "400" height = "400">

</canvas>

<script>

   function fillImage()

     var canvaid = ～～

     var getCon = ~～.getContext("2d");

     var im = document.getEl-Id("img");

     getCon.drawImage(im, 2, 2);

   }

</script>

</body>

> HTML SVG

⌐) Vector Based ⌐) graphics $\xrightarrow{in}$ XML format

⌐) Scalable Vector graphics

⌐) define ⌐) graphics → for → web

⌐) W3C Recommendation

⌐) container ⌐) Svg graphics → <Svg>

16 ⟶ Circle ⟶ Rounded Rectangle ⟶ ⟲Logo

⟶ Rectangle ⟶ ?Star

1) Circle ⟶ ⟨body⟩ →

1.C

Stroke width

↑

Stroke (color for?)

```
⟨body⟩
⟨svg width = "500" height = "500"⟩
   ⟨circle cx="95" cy="180" r="50"
   stroke = "black" stroke-width="4"
   fill = "silver" ⟩⟨/circle⟩
⟨/svg⟩
⟨/body⟩
```

2) rectangle
↓
⟨rect/⟩

3) rounded rectangle

⟶ Canvas ⟶ draw Text, graphics / can be animated / interactive/games

⟶ Multiple ⊙ on one HTML Page

⟶ getContext() ∴ Built In HTML object [⟶Properties ⟶Methods] ⟶drawing

⟶ fillStyle ∴ Property — Pattern / CSS color — gradient , default ⟶ Black

⟶ fillRect ∴ Draw Rectangle filled with fill Style on canvas -
()
| fillRect(x, y, width, height); |
⟶ Coordinates(0,0)

⟶ canvas ⟶ 2D grid

⟶ MoveTo(x, y) ⟶ Start point of line

⟶ lineTo(x,y) ⟶ End point of line ⟶ line.

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⟶ Stroke() ⟶ Ink method ⟶ Actually To ⟶ draw

⟶ beginPath() ⟶ Begins a Path.

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Saturday

◌ arc (x, y, r, sangle, eangle, c/ac)

◌ Creates Arc / Curve   ◌ sangle Starts @

       ◌ eangle Ret to $2 * \Pi$ Maximes

       ◌ x/y → ◌ y defines x & y coordinates of
            center of circle

       ◌ r → radius of circle

◌ gradient

◌ add Color Stop()

    Specities → color Stops   → can be ◌ many $\frac{x}{x}$ / 0 to 1
       ↳ Its position ◌ along ◌ gradient

Set fillstyle / Stroke Style → gradient → draw
             property   to   along   Shape

◌ Text ◌ font ◌ font Properties for text

       ↳ fillText (text, x, y) ◌ draws on canvas ◌ filled
                                           ◌ text

       ↳ StrokeText (text, x, y) ◌ — ll — (but no fill)

◌ drawImage (Image, x, y) ◌ Draw Image on a canvas.

12 Sunday

◌ Difference B/w Svg & canvas

SINo	Points	Canvas	SVG
1	Resolution	dependent	Independent
2	Games	Well ◌ graphic Suited Intensive	Not suited ◌ Game app
3	Describe 2D graphics	2D graphics on fly via JS	XML Based / InXML

4	Modified	Script only	Script & css
5	Image format	Bitmap	Vector
6	Flexibility	Not	Yes, expand size beyond its natural
7	Based	Pixel	Shape

→) W3Schools ↱Svg ↷ · - → /svg_intro.asp ← refer

　　　　↳?Canvas ↷ - - /canvas_intro.asp ← refer

④) Svg
　Canvas ↱) What It Is ↶ Element ↷ use css Is ↝ Based ↱ Resolution

　　　　　　↳x—　　　　　　　　　　　　　　　↳Image format ↓ Flexbility

↝ PYTHON

→ Created by ──→ Guido Van Rossum ↷ released —in→ 1991.

↱→ ↷System Scripting　　　　↷Maths