НАЦІОНАЛЬНИЙ ТЕХНІЧНИЙ УНІВЕРСИТЕТ

«ХАРКІВСЬКИЙ ПОЛІТЕХНІЧНИЙ ІНСТИТУТ»

Кафедра «ОБЧИСЛЮВАЛЬНОЇ ТЕХНІКИ ТА ПРОГРАМУВАННЯ»

«Комп’ютерна графіка»

*Звiт з лабораторної роботи №4*

*Тема: «Основи Incscape»*

Виконав:

студент групи КІТ-119б

Шарма О.Р.

Перевірив:

Кузнєцов П.В.

Харків – 2020

**Мета**: набути основні навички роботи в програмі Incscape, навчитися використовувати інструменти, малювати фігури ,використовуючи переміщення,зміну розміру та заливку з різною підводкою .

**Хід роботи**

**1.**Згідно завдання, було намальовано прямокутник, еліпс, зірку, спіраль, криву Безье та текст. При цьому було використано різноманітну заливку, обведення , градієнт ,рис.1



Рисунок 1 – Вихідне зображення

**2.** XMLопис кожної фігури ,описується розмір ,колір, обведення.

<?xml version="1.0" encoding="UTF-8" standalone="no"?>

<!-- Created with Inkscape (<http://www.inkscape.org/>) -->

<svg

xmlns:dc="http://purl.org/dc/elements/1.1/"

xmlns:cc="http://creativecommons.org/ns#"

xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"

xmlns:svg="http://www.w3.org/2000/svg"

xmlns="http://www.w3.org/2000/svg"

xmlns:xlink="http://www.w3.org/1999/xlink"

xmlns:sodipodi="http://sodipodi.sourceforge.net/DTD/sodipodi-0.dtd"

xmlns:inkscape="http://www.inkscape.org/namespaces/inkscape"

width="210mm"

height="297mm"

viewBox="0 0 210 297"

version="1.1"

id="svg8"

inkscape:version="0.92.4 (5da689c313, 2019-01-14)"

sodipodi:docname="drawing.svg">

<defs

id="defs2">

<pattern

inkscape:isstock="true"

inkscape:stockid="Stripes 1:1"

id="Strips1\_1"

patternTransform="translate(0,0) scale(10,10)"

height="1"

width="2"

patternUnits="userSpaceOnUse"

inkscape:collect="always">

<rect

id="rect5468"

height="2"

width="1"

y="-0.5"

x="0"

style="fill:black;stroke:none" />

</pattern>

<linearGradient

inkscape:collect="always"

id="linearGradient3873">

<stop

style="stop-color:#00ffff;stop-opacity:1;"

offset="0"

id="stop3869" />

<stop

style="stop-color:#00ffff;stop-opacity:0;"

offset="1"

id="stop3871" />

</linearGradient>

<linearGradient

inkscape:collect="always"

id="linearGradient3847">

<stop

style="stop-color:#ff00ff;stop-opacity:1;"

offset="0"

id="stop3843" />

<stop

style="stop-color:#ff00ff;stop-opacity:0;"

offset="1"

id="stop3845" />

</linearGradient>

<inkscape:perspective

sodipodi:type="inkscape:persp3d"

inkscape:vp\_x="28.72619 : 274.75387 : 1"

inkscape:vp\_y="0 : 3779.5275 : 0"

inkscape:vp\_z="822.427 : 274.75387 : 1"

inkscape:persp3d-origin="425.57659 : 87.66726 : 1"

id="perspective3803" />

<inkscape:perspective

sodipodi:type="inkscape:persp3d"

inkscape:vp\_x="0 : 148.5 : 1"

inkscape:vp\_y="0 : 1000 : 0"

inkscape:vp\_z="210 : 148.5 : 1"

inkscape:persp3d-origin="105 : 99 : 1"

id="perspective3739" />

<linearGradient

inkscape:collect="always"

xlink:href="#linearGradient3847"

id="linearGradient3849"

x1="42.253521"

y1="228.15349"

x2="429.57748"

y2="225.33659"

gradientUnits="userSpaceOnUse" />

<linearGradient

inkscape:collect="always"

xlink:href="#linearGradient3873"

id="linearGradient3875"

x1="40.281689"

y1="973.92816"

x2="457.14291"

y2="1099.6626"

gradientUnits="userSpaceOnUse" />

<meshgradient

inkscape:collect="always"

id="meshgradient3905"

gradientUnits="userSpaceOnUse"

x="14.914675"

y="127.07763">

<meshrow

id="meshrow3907">

<meshpatch

id="meshpatch3909">

<stop

path="c 34.6631,0 69.3261,0 103.989,0"

style="stop-color:#ffffff;stop-opacity:1"

id="stop3911" />

<stop

path="c 0,31.383 0,62.766 0,94.149"

style="stop-color:#800080;stop-opacity:1"

id="stop3913" />

<stop

path="c -34.6631,0 -69.3261,0 -103.989,0"

style="stop-color:#ffffff;stop-opacity:1"

id="stop3915" />

<stop

path="c 0,-31.383 0,-62.766 0,-94.149"

style="stop-color:#800080;stop-opacity:1"

id="stop3917" />

</meshpatch>

</meshrow>

</meshgradient>

<meshgradient

inkscape:collect="always"

id="meshgradient6297"

gradientUnits="userSpaceOnUse"

x="40.046223"

y="97.262138">

<meshrow

id="meshrow6299">

<meshpatch

id="meshpatch6301">

<stop

path="c 131.218,0 262.436,0 393.654,0"

style="stop-color:#ffffff;stop-opacity:1"

id="stop6303" />

<stop

path="c 0,88.2954 0,176.591 0,264.886"

style="stop-color:#ff00ff;stop-opacity:1"

id="stop6305" />

<stop

path="c -131.218,0 -262.436,0 -393.654,0"

style="stop-color:#ffffff;stop-opacity:1"

id="stop6307" />

<stop

path="c 0,-88.2954 0,-176.591 0,-264.886"

style="stop-color:#ff00ff;stop-opacity:1"

id="stop6309" />

</meshpatch>

</meshrow>

</meshgradient>

</defs>

<sodipodi:namedview

id="base"

pagecolor="#ffffff"

bordercolor="#666666"

borderopacity="1.0"

inkscape:pageopacity="0.0"

inkscape:pageshadow="2"

inkscape:zoom="0.71"

inkscape:cx="400"

inkscape:cy="560"

inkscape:document-units="mm"

inkscape:current-layer="layer1"

showgrid="false"

inkscape:window-width="1920"

inkscape:window-height="1001"

inkscape:window-x="-9"

inkscape:window-y="-9"

inkscape:window-maximized="1" />

<metadata

id="metadata5">

<rdf:RDF>

<cc:Work

rdf:about="">

<dc:format>image/svg+xml</dc:format>

<dc:type

rdf:resource="http://purl.org/dc/dcmitype/StillImage" />

<dc:title></dc:title>

</cc:Work>

</rdf:RDF>

</metadata>

<g

inkscape:label="Layer 1"

inkscape:groupmode="layer"

id="layer1">

<rect

id="rect3721"

width="110.36905"

height="66.523804"

x="10.583342"

y="224.42857"

style="stroke-width:0.17616962" />

<g

sodipodi:type="inkscape:box3d"

id="g3755"

inkscape:perspectiveID="#perspective3739"

inkscape:corner0="-0.30896697 : 0.16026917 : 0 : 1"

inkscape:corner7="-0.30896698 : 0.16026917 : 0.25 : 1">

<path

sodipodi:type="inkscape:box3dside"

id="path3757"

style="fill:#353564;fill-rule:evenodd;stroke:none;stroke-linejoin:round"

inkscape:box3dsidetype="6"

d="m 151.94643,-11.795035 v 0 l 15.42283,42.58486 v 0 z"

points="151.94643,-11.795035 167.36926,30.789825 167.36926,30.789825 151.94643,-11.795035 " />

<path

sodipodi:type="inkscape:box3dside"

id="path3767"

style="fill:#e9e9ff;fill-rule:evenodd;stroke:none;stroke-linejoin:round"

inkscape:box3dsidetype="11"

d="m 167.36926,30.789825 0,-2e-6 v 0 z"

points="167.36926,30.789823 167.36926,30.789823 167.36926,30.789825 " />

<path

sodipodi:type="inkscape:box3dside"

id="path3759"

style="fill:#4d4d9f;fill-rule:evenodd;stroke:none;stroke-linejoin:round"

inkscape:box3dsidetype="5"

d="m 151.94643,-11.795035 0,-3e-6 15.42283,42.584861 0,2e-6 z"

points="151.94643,-11.795038 167.36926,30.789823 167.36926,30.789825 151.94643,-11.795035 " />

<path

sodipodi:type="inkscape:box3dside"

id="path3765"

style="fill:#afafde;fill-rule:evenodd;stroke:none;stroke-linejoin:round"

inkscape:box3dsidetype="13"

d="m 151.94643,-11.795035 0,-3e-6 15.42283,42.584861 0,2e-6 z"

points="151.94643,-11.795038 167.36926,30.789823 167.36926,30.789825 151.94643,-11.795035 " />

<path

sodipodi:type="inkscape:box3dside"

id="path3763"

style="fill:#d7d7ff;fill-rule:evenodd;stroke:none;stroke-linejoin:round"

inkscape:box3dsidetype="14"

d="m 151.94643,-11.795038 v 0 l 15.42283,42.584861 v 0 z"

points="151.94643,-11.795038 167.36926,30.789823 167.36926,30.789823 151.94643,-11.795038 " />

<path

sodipodi:type="inkscape:box3dside"

id="path3761"

style="fill:#8686bf;fill-rule:evenodd;stroke:none;stroke-linejoin:round"

inkscape:box3dsidetype="3"

d="m 151.94643,-11.795035 0,-3e-6 v 0 z"

points="151.94643,-11.795038 151.94643,-11.795038 151.94643,-11.795035 " />

</g>

<ellipse

id="path3777"

cx="62.744061"

cy="60.764877"

rx="52.160713"

ry="35.151787"

style="stroke-width:0.19275929" />

<path

sodipodi:type="star"

id="path3779"

sodipodi:sides="5"

sodipodi:cx="283.48212"

sodipodi:cy="200.99405"

sodipodi:r1="72.105339"

sodipodi:r2="36.05267"

sodipodi:arg1="0.51524496"

sodipodi:arg2="1.1435635"

inkscape:flatsided="false"

inkscape:rounded="0"

inkscape:randomized="0"

d="m 346.22617,236.52381 -47.80549,-2.71766 -29.3404,37.84034 -12.18806,-46.30552 -45.05498,-16.21108 40.27285,-25.90072 1.49489,-47.85933 37.07805,30.29799 45.97888,-13.36762 -17.35736,44.62592 z"

inkscape:transform-center-x="2.5227912"

inkscape:transform-center-y="1.4402518"

style="stroke-width:0.26458332"

transform="matrix(0.56686659,0,0,0.57286642,2.5907613,-64.115712)" />

<g

sodipodi:type="inkscape:box3d"

id="g3789"

inkscape:perspectiveID="#perspective3803"

inkscape:corner0="0.32283468 : 0.40405909 : 0 : 1"

inkscape:corner7="0.0065046491 : 0.27590365 : 0.25 : 1">

<path

sodipodi:type="inkscape:box3dside"

id="path3791"

style="fill:#353564;fill-rule:evenodd;stroke:none;stroke-linejoin:round"

inkscape:box3dsidetype="6"

d="m 328.72619,-990.77976 v 366.15837 l 78.4731,102.81874 v -307.95798 z"

points="328.72619,-624.62139 407.19929,-521.80265 407.19929,-829.76063 328.72619,-990.77976 " />

<path

sodipodi:type="inkscape:box3dside"

id="path3801"

style="fill:#e9e9ff;fill-rule:evenodd;stroke:none;stroke-linejoin:round"

inkscape:box3dsidetype="11"

d="m 407.19929,-829.76063 95.2821,-214.49607 v 385.48761 l -95.2821,136.96644 z"

points="502.48139,-1044.2567 502.48139,-658.76909 407.19929,-521.80265 407.19929,-829.76063 " />

<path

sodipodi:type="inkscape:box3dside"

id="path3793"

style="fill:#4d4d9f;fill-rule:evenodd;stroke:none;stroke-linejoin:round"

inkscape:box3dsidetype="5"

d="m 328.72619,-990.77976 94.28572,-318.37954 79.46948,264.9026 -95.2821,214.49607 z"

points="423.01191,-1309.1593 502.48139,-1044.2567 407.19929,-829.76063 328.72619,-990.77976 " />

<path

sodipodi:type="inkscape:box3dside"

id="path3799"

style="fill:#afafde;fill-rule:evenodd;stroke:none;stroke-linejoin:round"

inkscape:box3dsidetype="13"

d="m 328.72619,-624.62139 94.28572,-203.30122 79.46948,169.15352 -95.2821,136.96644 z"

points="423.01191,-827.92261 502.48139,-658.76909 407.19929,-521.80265 328.72619,-624.62139 " />

<path

sodipodi:type="inkscape:box3dside"

id="path3797"

style="fill:#d7d7ff;fill-rule:evenodd;stroke:none;stroke-linejoin:round"

inkscape:box3dsidetype="14"

d="m 423.01191,-1309.1593 v 481.23669 l 79.46948,169.15352 v -385.48761 z"

points="423.01191,-827.92261 502.48139,-658.76909 502.48139,-1044.2567 423.01191,-1309.1593 " />

<path

sodipodi:type="inkscape:box3dside"

id="path3795"

style="fill:#8686bf;fill-rule:evenodd;stroke:none;stroke-linejoin:round"

inkscape:box3dsidetype="3"

d="m 328.72619,-990.77976 94.28572,-318.37954 v 481.23669 l -94.28572,203.30122 z"

points="423.01191,-1309.1593 423.01191,-827.92261 328.72619,-624.62139 328.72619,-990.77976 " />

</g>

<path

sodipodi:type="spiral"

style="fill:url(#meshgradient3905);fill-rule:evenodd;stroke:url(#Strips1\_1);stroke-width:0.26458332;fill-opacity:1"

id="path3807"

sodipodi:cx="61.988091"

sodipodi:cy="179.07143"

sodipodi:expansion="1"

sodipodi:revolution="3"

sodipodi:radius="59.394001"

sodipodi:argument="-18.109173"

sodipodi:t0="0"

d="m 61.988091,179.07143 c 2.198331,2.00881 -1.623268,3.95438 -3.338789,3.65377 -4.648954,-0.81465 -5.654479,-6.67708 -3.968754,-10.33135 3.015367,-6.53662 11.55912,-7.67133 17.323907,-4.28374 8.460057,4.97143 9.744369,16.50609 4.598721,24.31647 -6.85834,10.41 -21.475935,11.84113 -31.309026,4.9137 -12.373941,-8.71745 -13.950117,-26.45664 -5.228688,-38.30158 10.56282,-14.34581 31.443466,-16.06618 45.294145,-5.54367 16.322543,12.40041 18.186673,36.43409 5.858654,52.2867 -14.23319,18.30247 -41.427262,20.31014 -59.279263,6.17364 -20.284578,-16.06279 -22.435671,-46.42222 -6.488621,-66.27182 17.89018,-22.26826 51.418476,-24.56271 73.264382,-6.80361 24.253101,19.71597 26.690871,56.41572 7.118591,80.25694" />

<path

style="fill:none;stroke:#000000;stroke-width:0.32313639px;stroke-linecap:butt;stroke-linejoin:miter;stroke-opacity:1"

d="m 124.63678,89.456418 c 52.35075,33.980062 -2.77967,34.427182 -2.77967,34.427182 l 51.88745,2.68263 -13.89843,6.25949 c 0,0 43.5484,78.24359 32.42966,13.41318"

id="path3815"

inkscape:connector-curvature="0" />

<text

xml:space="preserve"

style="font-style:normal;font-weight:normal;font-size:13.29442501px;line-height:1.25;font-family:sans-serif;letter-spacing:0px;word-spacing:0px;fill:#000000;fill-opacity:1;stroke:none;stroke-width:0.33236063"

x="142.89378"

y="194.49052"

id="text3819"

transform="scale(0.85252408,1.1729874)"><tspan

sodipodi:role="line"

id="tspan3817"

x="142.89378"

y="194.49052"

style="stroke-width:0.33236063">Р”РёРјРєР° РґСѓСЂР°Рє:)</tspan></text>

<path

style="stroke-width:1.40845072"

d="M 40.28169,973.92814 V 849.28025 H 248.73239 457.1831 V 973.92814 1098.576 H 248.73239 40.28169 Z"

id="path3821"

inkscape:connector-curvature="0"

transform="scale(0.26458333)" />

<path

style="fill:#ffff00;stroke-width:1.4097638;fill-opacity:1;stroke:url(#Strips1\_1);stroke-miterlimit:4;stroke-dasharray:none"

d="m 586.34854,342.60207 c -0.32618,-0.58757 -6.16085,-22.6176 -12.96595,-48.95562 -6.8051,-26.33803 -12.51148,-48.06281 -12.68085,-48.27729 -0.24869,-0.31491 -86.94649,-32.11415 -93.63408,-34.34335 -1.03527,-0.3451 16.92539,-12.87058 39.91256,-27.83441 22.98718,-14.96383 42.23785,-27.92316 42.77927,-28.7985 0.54142,-0.87534 1.64097,-23.77462 2.44344,-50.8873 1.1099,-37.499483 1.87165,-49.214411 3.1833,-48.955762 0.94834,0.187006 18.58899,14.289119 39.20142,31.338027 20.61245,17.048915 37.89991,30.984225 38.41659,30.967365 0.51668,-0.0169 22.16783,-6.30605 48.11365,-13.976 25.94583,-7.669946 47.40922,-13.710373 47.69642,-13.423169 0.2872,0.287203 -7.5367,21.481169 -17.38646,47.097709 -9.84978,25.61654 -17.54117,47.53321 -17.092,48.70372 0.44916,1.17051 13.22484,20.4911 28.3904,42.93463 15.16555,22.44354 27.06258,40.80504 26.43782,40.80334 -0.62475,-10e-4 -22.98269,-1.28376 -49.68431,-2.84901 -26.70162,-1.56527 -49.2733,-2.56778 -50.15928,-2.22779 -0.88597,0.33997 -12.92159,15.40725 -26.7458,33.48283 -34.37253,44.94308 -35.55206,46.41483 -36.22614,45.20058 z"

id="path3837"

inkscape:connector-curvature="0"

transform="scale(0.26458333)" />

<path

style="fill:url(#linearGradient3875);stroke-width:1.40845072;fill-opacity:1"

d="M 40.28169,973.92814 V 849.28025 H 248.73239 457.1831 V 973.92814 1098.576 H 248.73239 40.28169 Z"

id="path3839"

inkscape:connector-curvature="0"

transform="scale(0.26458333)" />

<path

style="fill:url(#linearGradient3849);stroke-width:1.40845072;fill-opacity:1;stroke:url(#meshgradient6297);stroke-opacity:1"

d="M 207.88732,360.48414 C 105.30781,349.34449 31.713424,286.24107 41.647766,217.94222 50.050257,160.17489 111.27861,113.47003 195.69811,100.43294 c 21.47735,-3.316796 62.28547,-3.271019 83.31597,0.0935 37.91291,6.06534 69.30913,17.65325 97.11244,35.84284 14.01416,9.16839 35.65518,31.07688 42.93552,43.46615 9.37165,15.94812 13.10085,28.21553 13.83203,45.5012 1.29168,30.53577 -9.563,55.19648 -35.0643,79.66252 -28.44728,27.29245 -65.28731,44.45228 -113.38925,52.81597 -19.2638,3.34948 -57.88722,4.6961 -76.5532,2.66906 z"

id="path3841"

inkscape:connector-curvature="0"

transform="scale(0.26458333)" />

</g>

</svg>

**Висновок**: у ході лабораторної роботи були набуті навички роботи в програмі Incscape, навчитилися використовувати інструменти, малювати фігури ,використовуючи переміщення,зміну розміру та заливку з різним обведенням. Дослідили різницю між векторним та растровим форматом зображення та дійшли висновку, що перевага векторного зображення полягає в тому,що растрові зображення погано масштабуються,при збільшення розпадаються на пікселі,в той час як векторні, можуть бути збільшені без втрати якості. Також, дослідили переваги формата SVG: не займає багато місця, масштабується без зміни якості, переглянути вміст файлу .svg можна практично будь-яким браузером.