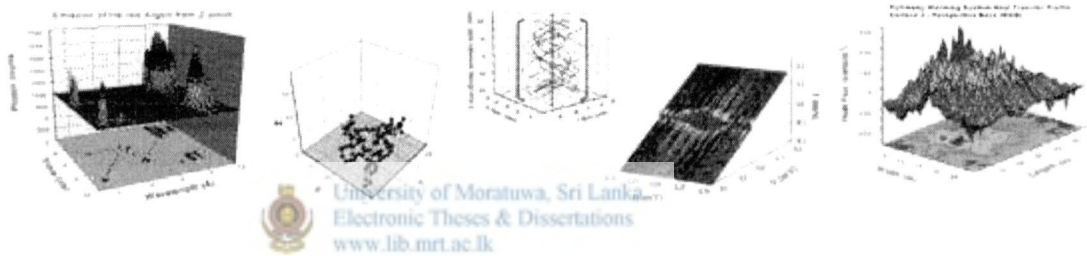


CHAPTER EIGHT

CONCLUSION



THE USAGE OF WEB MEDIUM FOR EFFECTIVE STATISTICS

EDUCATION

CHAPTER EIGHT CONTENTS

- ✚ ACHIEVEMENTS OF AIM AND OBJECTIVES
- ✚ PROBLEMS ENCOUNTERED
- ✚ FUTURE ENHANCEMENTS

8.1 ACHIEVEMENTS OF AIM AND OBJECTIVES

In this research, my main aim was to conduct a research about statistics education and to understand how we can use Web media for effective statistics education.

According the literature survey I made, I was able to find important information about statistics education as well as Web technology. With the help of that information I could direct my research in to the direction of “usage of multimedia for effective Statistics education”. Following can be stated as the major achievements of this research.

- ✚ Identification of the obstacles for Statistics education
- ✚ Understanding strategies in teaching statistics
- ✚ Knowledge about the strength and the weakness of the Web
- ✚ How to create interactive Web pages
- ✚ How to present teaching materials through the Web media
- ✚ Ability to know different types of software tools
- ✚ The way of incorporating data base in a Web page
- ✚ The way of publishing Web
- ✚ The knowledge gathered about how to write a thesis

8.2 PROBLEMS ENCOUNTERED

A major problem encountered while developing the Web-based prototype was that the usage of Sinhala language in the Web. The browser I used did not support for Sinhala fonts. It was so big problem that I did not use Sinhala fonts frequently within Web pages. Therefore, I it caused me to limit the information presented using Sinhala language. To overcome this problem I could do two alternatives namely the usage of images of the fonts and the storing the font style with the machine. Usage of images in a Web page is not a wise thing as it delays the loading time of the page on the browser. To be able to download the required Sinhala font for the user to each machine they use I could include a hyperlink for that. Practicably, without having the copyright for that font style you cannot do so.

Lot of problems came due to the difficulties when Flash files are incorporating with the Web page by means of Microsoft FrontPage.


When creating Web pages to present information a real problem came due to the differences in the screen size of each computer.

There were few problems when interacting with IIS Web server and fortunately I was able to find solutions for them with the help of an expert.

Initially I wanted to add multimedia features like video to the Web-based prototype system. Unfortunately, due to the lack of expensive hardware resources like digital video cameras, I couldn't succeed.

8.3 FUTURE ENHANCEMENTS

✦ To apply other areas of Statistics

Even though this research aimed to study how to use Web media for effective statistics education, when developing the Web-based prototype system, I concentrated only to descriptive statistics. There I couldn't take other areas of statistics such as probability,  inference etc. into consideration. Therefore, I would like to enhance this research and to develop a Web-based system that addresses to other areas too.

✦ To include on-line examinations

If the system can be developed so that on-line examinations can be carried out, it would be a good. In the future I hope to do include these facilities.

✦ Introduce the system for the University level

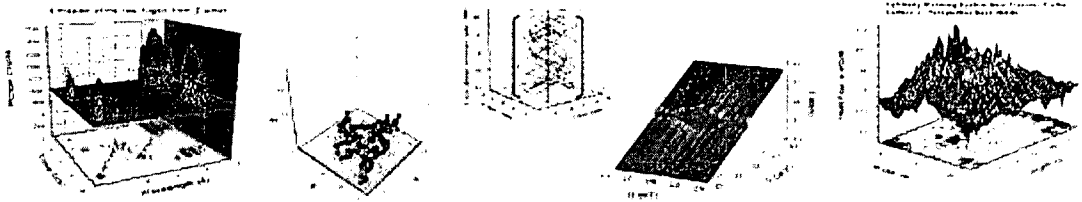
I would like to expand this system by incorporating the syllabuses taught in the University and introduce the system to university level.

✚ Finally, I would like to expand the system by incorporating facilities like video/audio, 3-D features etc. to the system.



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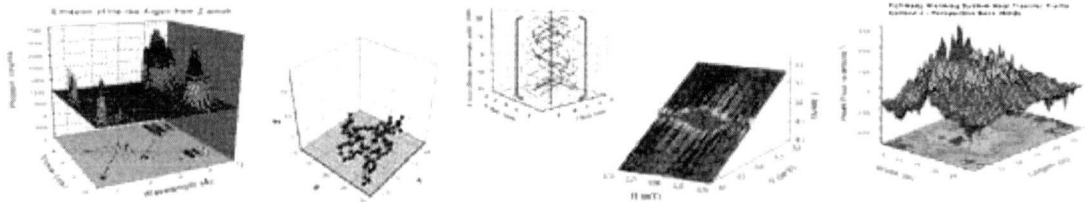
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APPENDIX



THE USAGE OF WEB MEDIUM FOR EFFECTIVE STATISTICS

EDUCATION

APPENDIX CONTENTS



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- (A) HTML CODES TO GENERATE THE HOME PAGE OF THE WEB SITE
- (B) HTML CODES TO GENERATE A WINDOWED SCREEN
- (C) JAVASCRIPT CODE TO GENERATE THE FIGURE NO 6 (DEMONSTRATION OF SKEW NESS)
- (D) JAVASCRIPT CODES TO GENERATE THE FIGURE 4 (EXERCISE TO CALCULATE MEAN, SD, MEDIAN ETC).
- (E) JAVASCRIPT CODES TO GENERATE THE FIGURE 8 (DEMONSTRATION OF CALCULATION OF SD).
- (F) JAVASCRIPT CODES TO GENERATE THE FIGURE 9 (DEMONSTRATION OF EASY VISUALIZATION).
- (G) HTML/ASP CODE TO GENERATE THE FIGURE 14 (MESSAGE SENDING).
- (H) HTML/ASP CODE TO GENERATE THE FIGURE 15 (SEARCHING FOR INFORMATION).
- (I) HTML CODE TO GENERATE THE FIGURE 16 (ON-LINE QUESTION PAPER).



A. HTML codes to generate the home page of the Web site.

```
<html>
<head>
<title>index.gif</title>
<meta http-equiv="Content-Type" content="text/html;">
<!-- Fireworks MX Dreamweaver MX target. Created Wed Jul 28 11:19:51
GMT-0700 (Pacific Standard Time) 2004-->
<script language="JavaScript">
<!--
function MM_findObj(n, d) { //v4.01
var p,i,x; if(!d) d=document; if((p=n.indexOf("?"))>0&&parent.frames.length) {
d=parent.frames[n.substring(p+1)].document; n=n.substring(0,p);}
if(!(x=d[n])&&d.all) x=d.all[n]; for (i=0;!x&&i<d.forms.length;i++)
x=d.forms[i][n];
for(i=0;!x&&d.layers&&i<d.layers.length;i++)
x=MM_findObj(n,d.layers[i].document);
if(!x && d.getElementById) x=d.getElementById(n); return x;
}
function MM_swapImage() { //v3.0
var i,j=0,x,a=MM_swapImage.arguments; document.MM_sr=new Array;
for(i=0;i<(a.length-2);i+=3)
if ((x=MM_findObj(a[i]))!=null){document.MM_sr[j++]=x; if(!x.oSrc)
x.oSrc=x.src; x.src=a[i+2];}
}
function MM_swapImgRestore() { //v3.0
var i,x,a=document.MM_sr; for(i=0;a&&i<a.length&&(x=a[i])&&x.oSrc;i++)
x.src=x.oSrc;
}

function MM_preloadImages() { //v3.0
var d=document; if(d.images){ if(!d.MM_p) d.MM_p=new Array();
var i,j=d.MM_p.length,a=MM_preloadImages.arguments; for(i=0; i<a.length;
i++)
if (a[i].indexOf("#")!=0){ d.MM_p[j]=new Image; d.MM_p[j++].src=a[i];}}
}

function mmLoadMenus() {
if (window.mm_menu_0709104332_0) return;
window.mm_menu_0709104332_0_1 = new
Menu("Descriptive&nbsp;Statistics",88,18,"Courier New, Courier,
mono",18,"#0066ff","#ffffff","#99ccff","#99ccff","left","middle",0,0,100,0,0,true,
false,true,0,true,true);

mm_menu_0709104332_0_1.addItem("Overvie","window.open('../Info/stati
stics.htm', '_blank');");
mm_menu_0709104332_0_1.fontWeight="bold";
mm_menu_0709104332_0_1.hideOnMouseOut=true;
mm_menu_0709104332_0_1.menuBorder=0;
mm_menu_0709104332_0_1.menuLiteBgColor='#ffffff';
```

```
mm_menu_0709104332_0_1.menuBorderBgColor='#555555';
mm_menu_0709104332_0_1.bgColor='#555555';
window.mm_menu_0709104332_0_2 = new
Menu("Summarizing&nbsp;Data",55,18,"Courier New, Courier,
mono",18,"#0066ff","#ffffff","#99ccff","#99ccff","left","middle",0,0,100,0,0,true,
false,true,0,true,true);
```

```
mm_menu_0709104332_0_2.addItem("Data","window.open('../Info/Data.ht
m', '_blank');");
```

```
mm_menu_0709104332_0_2.fontWeight="bold";
mm_menu_0709104332_0_2.hideOnMouseOut=true;
mm_menu_0709104332_0_2.menuBorder=0;
mm_menu_0709104332_0_2.menuLiteBgColor='#ffffff';
mm_menu_0709104332_0_2.menuBorderBgColor='#555555';
mm_menu_0709104332_0_2.bgColor='#555555';
window.mm_menu_0709104332_0_3 = new
```

```
Menu("Pictorial&nbsp;Representation",385,18,"Courier New, Courier,
mono",18,"#0066ff","#ffffff","#99ccff","#99ccff","left","middle",0,0,100,0,0,true,
false,true,0,true,true);
```

```
mm_menu_0709104332_0_3.addItem("Histogram","window.open('../Info/H
istogram1.htm', '_blank');");
```

```
mm_menu_0709104332_0_3.addItem("Dot&nbsp;Plot","window.open('../In
fo/DotPlot.htm', '_blank');");
```

```
mm_menu_0709104332_0_3.addItem("Frequency&nbsp;&nbsp;Distributio
ns","window.open('../Info/FreDis.htm', '_blank');");
```

```
mm_menu_0709104332_0_3.addItem("Cumulative&nbsp;Frequency&nbsp;
Distributions","window.open('../Info/CFG.htm', '_blank');");
```

```
mm_menu_0709104332_0_3.addItem("Orgive","window.open('../Info/GrR
Fred.htm', '_blank');");
```

```
mm_menu_0709104332_0_3.fontWeight="bold";
mm_menu_0709104332_0_3.hideOnMouseOut=true;
mm_menu_0709104332_0_3.menuBorder=0;
mm_menu_0709104332_0_3.menuLiteBgColor='#ffffff';
mm_menu_0709104332_0_3.menuBorderBgColor='#555555';
mm_menu_0709104332_0_3.bgColor='#555555';
window.mm_menu_0709104332_0_4 = new
```

```
Menu("Measures&nbsp;of&nbsp;Central&nbsp;Tendancy",154,18,"Courier New,
Courier,
mono",18,"#0066ff","#ffffff","#99ccff","#99ccff","left","middle",0,0,100,0,0,true,
false,true,0,true,true);
```

```
mm_menu_0709104332_0_4.addItem("Mean","window.open('../Info/mean.
htm', '_blank');");
```

```
mm_menu_0709104332_0_4.addItem("Median","window.open('../Info/median.htm', '_blank');");
```

```
mm_menu_0709104332_0_4.addItem("Mode","window.open('../Info/mode.htm', '_blank');");
```

```
mm_menu_0709104332_0_4.addItem("Weighted&nbsp;Mean","window.open('../Info/Mad.htm', '_blank');");
```

```
mm_menu_0709104332_0_4.fontWeight="bold";  
mm_menu_0709104332_0_4.hideOnMouseOut=true;  
mm_menu_0709104332_0_4.menuBorder=0;  
mm_menu_0709104332_0_4.menuLiteBgColor='#ffffff';  
mm_menu_0709104332_0_4.menuBorderBgColor='#555555';  
mm_menu_0709104332_0_4.bgColor='#555555';  
window.mm_menu_0709104332_0_5 = new
```

```
Menu("Measures&nbsp;of&nbsp;Dispersion",264,18,"Courier New, Courier, mono",18,"#0066ff","#ffffff","#99ccff","#99ccff","left","middle",0,0,100,0,0,true, false,true,0,true,true);
```

```
mm_menu_0709104332_0_5.addItem("Range","window.open('../Info/MeaDispUng1.htm', '_blank');");
```

```
mm_menu_0709104332_0_5.addItem("Variance");
```

```
mm_menu_0709104332_0_5.addItem("Standard&nbsp;Deviation","window.open('../Info/MeaDispUng3.htm', '_blank');");
```

```
mm_menu_0709104332_0_5.addItem("Mean&nbsp;Absolute&nbsp;Deviation","window.open('../Info/Mad.htm', '_blank');");
```

```
mm_menu_0709104332_0_5.fontWeight="bold";  
mm_menu_0709104332_0_5.hideOnMouseOut=true;  
mm_menu_0709104332_0_5.menuBorder=0;  
mm_menu_0709104332_0_5.menuLiteBgColor='#ffffff';  
mm_menu_0709104332_0_5.menuBorderBgColor='#555555';  
mm_menu_0709104332_0_5.bgColor='#555555';  
window.mm_menu_0709104332_0_6 = new
```

```
Menu("Interactives",264,18,"Courier New, Courier, mono",18,"#0066ff","#ffffff","#99ccff","#99ccff","left","middle",0,0,100,0,0,true, false,true,0,true,true);
```

```
mm_menu_0709104332_0_6.addItem("Skewness","window.open('../Info/SkewShow.htm', '_blank');");
```

```
mm_menu_0709104332_0_6.addItem("Histograms","window.open('../Info/TSelGraph.htm', '_blank');");
```

```
mm_menu_0709104332_0_6.addItem("Standard&nbsp;Deviation","window.open('../Info/SD.htm', '_blank');");
```

```
mm_menu_0709104332_0_6.addItem("Proof&nbsp;of&nbsp;the&nbsp;Mode","window.open('../Info/ModeProof.htm', '_blank');");
```

```
mm_menu_0709104332_0_6.addItem("Mean&nbsp;Absolute&nbsp;Deviati  
on","window.open('../Info/MADTest.htm', '_blank');");
```

```
mm_menu_0709104332_0_6.addItem("Mean,&nbsp;Median,&nbsp;Mode  
&nbsp;etc","window.open('../Info/DesStct.htm', '_blank');");  
mm_menu_0709104332_0_6.fontWeight="bold";  
mm_menu_0709104332_0_6.hideOnMouseOut=true;  
mm_menu_0709104332_0_6.menuBorder=0;  
mm_menu_0709104332_0_6.menuLiteBgColor='#ffffff';  
mm_menu_0709104332_0_6.menuBorderBgColor='#555555';  
mm_menu_0709104332_0_6.bgColor='#555555';  
window.mm_menu_0709104332_0 = new Menu("root",319,18,"Courier New,  
Courier,  
mono",18,"#0066ff","#ffffff","#99ccff","#99ccff","left","middle",0,0,100,0,0,true,  
false,true,0,true,true);  
mm_menu_0709104332_0.addItem(mm_menu_0709104332_0_1);  
mm_menu_0709104332_0.addItem(mm_menu_0709104332_0_2);
```

```
mm_menu_0709104332_0.addItem(mm_menu_0709104332_0_3,"window.  
open('../Info/GrRFred.htm', '_blank');");
```

```
mm_menu_0709104332_0.addItem(mm_menu_0709104332_0_4,"window.  
open('../Info/MeaCenTen.htm', '_blank');");
```

```
mm_menu_0709104332_0.addItem(mm_menu_0709104332_0_5,"window.  
open('../Info/MeaDisp.htm', '_blank');");  
mm_menu_0709104332_0.addItem(mm_menu_0709104332_0_6);  
mm_menu_0709104332_0.fontWeight="bold";  
mm_menu_0709104332_0.hideOnMouseOut=true;  
mm_menu_0709104332_0.childMenuIcon="arrows.gif";  
mm_menu_0709104332_0.menuBorder=0;  
mm_menu_0709104332_0.menuLiteBgColor='#ffffff';  
mm_menu_0709104332_0.menuBorderBgColor='#555555';  
mm_menu_0709104332_0.bgColor='#555555';  
window.mm_menu_0728111739_1 = new Menu("root",116,24,"Courier New,  
Courier,  
mono",18,"#0066ff","#ffffff","#99ccff","#99ccff","left","middle",3,0,100,-  
205,30,true,false,true,0,true,true);
```

```
mm_menu_0728111739_1.addItem("Searching","window.open('../Search/S  
earch.htm', '_blank');");  
mm_menu_0728111739_1.fontWeight="bold";  
mm_menu_0728111739_1.hideOnMouseOut=true;  
mm_menu_0728111739_1.menuBorder=0;  
mm_menu_0728111739_1.menuLiteBgColor='#ffffff';  
mm_menu_0728111739_1.menuBorderBgColor='#555555';  
mm_menu_0728111739_1.bgColor='#555555';  
window.mm_menu_0728101716_1 = new Menu("root",171,24,"Courier New,  
Courier,
```



```

//-->
</script>
<script language="JavaScript1.2" src="mm_menu.js"></script>
</head>
<body bgcolor="#99ccff" onLoad="MM_preloadImages('index_r2_c2_f2.gif');">
<script language="JavaScript1.2">mmLoadMenus();</script>
<table border="0" cellpadding="0" cellspacing="0" width="930">
<!-- fwtable fwsrc="final.png" fwbase="index.gif" fwstyle="Dreamweaver"
fwdocid = "742308039" fwnested="0" -->
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>

<tr>
<td colspan="4"></td>
<td></td>
</tr>
<tr>
<td rowspan="4"></td>
<td colspan="2"></td>
<td rowspan="4"></td>
<td></td>
</tr>
<tr>
<td colspan="2"></td>
<td></td>
</tr>
<tr>
<td rowspan="2"></td>
<td><a href="#" onMouseOut="MM_swapImgRestore();"
onMouseOver="MM_swapImage('index_r2_c2','index_r2_c2_f2.gif',1);"></a></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>

```



```

<map name="m_index_r2_c1">
<area shape="rect" coords="50,191,228,216" href="#" alt=""
onMouseOut="MM_startTimeout();"
onMouseOver="MM_showMenu(window.mm_menu_0709104332_0,51,233,null,
'index_r2_c1');" >
</map>
<map name="m_index_r4_c2">
<area shape="rect" coords="-139,80,39,105" href="#" alt=""
onMouseOut="MM_startTimeout();"
onMouseOver="MM_showMenu(window.mm_menu_0709104332_0,-
138,122,null,'index_r4_c2');" >
</map>
<map name="m_index_r5_c3">
<area shape="rect" coords="420,52,528,74" href="#" alt=""
onMouseOut="MM_startTimeout();"
onMouseOver="MM_showMenu(window.mm_menu_0728111739_1,420,97,null,
'index_r5_c3');" >
<area shape="rect" coords="557,49,650,75" href="#" alt=""
onMouseOut="MM_startTimeout();"
onMouseOver="MM_showMenu(window.mm_menu_0728101716_1,560,86,null,
'index_r5_c3');" >
<area shape="rect" coords="228,53,401,73" href="http://www.yahoo.com"
target="_blank" alt="" onMouseOut="MM_startTimeout();"
onMouseOver="MM_showMenu(window.mm_menu_0727151709_1,253,91,null,
'index_r5_c3');" >
<area shape="rect" coords="-156,51,22,76" href="#" alt=""
onMouseOut="MM_startTimeout();"
onMouseOver="MM_showMenu(window.mm_menu_0709104332_0,-
155,93,null,'index_r5_c3');" >
<area shape="rect" coords="38,47,207,70" href="#" alt=""
onMouseOut="MM_startTimeout();"
onMouseOver="MM_showMenu(window.mm_menu_0705143435_0,67,89,null,'i
ndex_r5_c3');" >
</map>
</table>
</body>
</html>

```



B. HTML codes to generate a windowed screen.

```
<html>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=windows-1252">
<meta name="GENERATOR" content="Microsoft FrontPage 5.0">
<meta name="ProgId" content="FrontPage.Editor.Document">
<title>Cumulative Frequency Graph</title>
<style type="text/css">
<!--
.TextArea    {
                position:absolute;
                left:20px;top:10px;
                height:600px;width:420px;
                text-align:justify;
            }

.Visual      {
                position:absolute;
                left:460px;top:180px;
                height:700px;width:160px;
            }

.note       {
                font-size:12pt;
            }

a:link      {color:Green;text-decoration:none;}
a:visited   {color:orange;}
a:hover     {color:DarkGreen;text-decoration:none;}

-->
</style>
</head>

<body bgcolor="#99CCFF">
    <div class="TextArea">
        <h2 align="center"><font face="AGaramond" size="5" color="#008000">
            Introduction to
        <a name="Data">Data</a></font></h2> <hr color="green">
        <font face="AGaramond" size="4">
            Basically data can be broadly classified into two types, namely attribute
            (also called quantitative or
        <a name="categorical">categorical</a>) or numerical.
        <br><br>
        <u>
            Examples of categorical data:</u>
        </font>
```


C. JavaScript code to generate the figure no 6 (Demonstration of Skewness).

```
<script language="JavaScript">
<!--
function SelGraph()
{
    num=document.G.Clr.value
    if (num==1)
    {
        if (document.G.Gph.value==5)
            document.images[0].src="grph/G5.gif"
        if (document.G.Gph.value==10)
            document.images[0].src="grph/G10.gif"
        if (document.G.Gph.value==20)
            document.images[0].src="grph/G20.gif"
        if (document.G.Gph.value==25)
            document.images[0].src="grph/G25.gif"
        if (document.G.Gph.value==50)
            document.images[0].src="grph/G50.gif"
    }
    if (num==2)
    {
        if (document.G.Gph.value==5)
            document.images[0].src="grph/RG5.gif"
        if (document.G.Gph.value==10)
            document.images[0].src="grph/RG10.gif"
        if (document.G.Gph.value==20)
            document.images[0].src="grph/RG20.gif"
        if (document.G.Gph.value==25)
            document.images[0].src="grph/RG25.gif"
        if (document.G.Gph.value==50)
            document.images[0].src="grph/RG50.gif"
    }
    if (num==3)
    {
        if (document.G.Gph.value==5)
            document.images[0].src="grph/BG5.gif"
        if (document.G.Gph.value==10)
            document.images[0].src="grph/BG10.gif"
        if (document.G.Gph.value==20)
            document.images[0].src="grph/BG20.gif"
        if (document.G.Gph.value==25)
            document.images[0].src="grph/BG25.gif"
        if (document.G.Gph.value==50)
            document.images[0].src="grph/BG50.gif"
    }
    if (num==4)
    {
        if (document.G.Gph.value==5)
```

```
        document.images[0].src="grph/GG5.gif"
    if (document.G.Gph.value==10)
        document.images[0].src="grph/GG10.gif"
    if (document.G.Gph.value==20)
        document.images[0].src="grph/GG20.gif"
    if (document.G.Gph.value==25)
        document.images[0].src="grph/GG25.gif"
    if (document.G.Gph.value==50)
        document.images[0].src="grph/GG50.gif"
    }
}
-->
</Script>
```



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D. JavaScript codes to generate the figure 4 (Exercise to calculate Mean, SD, Median etc).

```

<SCRIPT language=JavaScript>
  <!-- hide this script tag's contents from old browsers

function compute(form){
  var E =30; //total number of input spaces
  var N = 0;
  var SUM = 0.0;
  var Std = 0.0;
  var SKStd = 0.0;
  var KUStd = 0.0;
  var theList = new Array();
  var theL = new Array();
  var theMedian = 0.0;
  var theQ1=0.0;
  var theQ3=0.0;

  //calculate mean
  // Run through all the input, add those that have valid values
  for(i = 0; i < E; i++) {
    if(!isNaN(parseFloat(form.elements[i].value))) {
      SUM += parseFloat(form.elements[i].value);
      N++;
    }
  }
  //put these values in an array.....
  var a = 0;
  for(i = 0; i < E; i++) {
    if(!isNaN(parseFloat(form.elements[i].value))) {
      theList[a]=parseFloat(form.elements[i].value);
      a++;
    }
  }

  if(N<=3) {
    alert("Insufficient data.Please enter more data"); }
  else {
    form.TOTAL.value = N; //number of observations
    // Do the math
    x = SUM / N;
    y = Math.round(10000000*x);
    z = y/10000000;
    form.MEAN.value = z;
    var MAD =0;
    var QMedst=0;
    //calculate Standard Deviation
    // Run through all the input, add those that have valid values
    for(i = 0; i < E; i++) {

```



```

        if(!isNaN(parseFloat(form.elements[i].value))) {
            Std += Math.pow((form.elements[i].value - x), 2);
MAD += Math.abs(form.elements[i].value - x);
            SKStd += Math.pow((form.elements[i].value - x),
3);
                KUStd += Math.pow((form.elements[i].value - x),
4);
            }
        }
MAD = MAD/N;
var QMedst = Math.round(10000000*MAD)/10000000;
form.QMedst.value=QMedst;
    var V1 = Std/(N-1);
    var V = Math.round(10000000*V1)/10000000;
    var b = Math.sqrt(V);
    var SD = Math.round(10000000*b)/10000000;
    form.SDEV.value = SD;
    form.VR.value = V;

//sort the list
    for(i=0; i<theList.length-1; i++) {
        for(j=i+1; j<theList.length; j++) {
            if( eval(theList[j]) < eval(theList[i])) {
                temp = theList[i];
                theList[i] = theList[j];
                theList[j] = temp;
            }
        }
    }

//Display MIN and MAX values
    var MIN = theList[0];
    var MAX = theList[N-1];
    form.MIN.value =theList[0]; //MIN value
    form.MAX.value =theList[N-1]; //MAX value
    var aux = 0;
    if(N%2 == 1) {
        aux = Math.floor(N/2);
        theMedian = theList[aux]; }
    else {
        theMedian = (theList[N/2]+theList[((N/2)-1]))/2;
    }

//calculate Standard Error
    var SEr = SD / Math.sqrt(N);
    SEr = Math.round(1000000*SEr);
    SEr = SEr/1000000;
    form.MEDIAN.value=theMedian; //print the values
    form.Rrange.value=MAX-MIN;
    return;
} //closing for sufficiency check

```



```

    } //closing of main function

    function MsgSD() {
        fenster = open("", "Welcome",
"scrollbar=yes,width=200,height=120");
        fenster.document.open();
        with (fenster.document) {
            write("<html><base target='Frame 0'><body
onBlur='window.close()'>");//Frame0 is name of the display change it, if

            //necessary
            write("<center><h3>Standard Deviation (SD)</h3>SD is the positive
square root of variance</center>");
            <!-- write("<A
href='http://www.htmlgoodies.com/javagoodies'>http://www.htmlgoodies.co
m/javagoodies</A><BR>");
            write("</body></html>");
            }
            fenster.document.close();
        }
    }

    function MsgRng() {
        fenster = open("", "Welcome",
"scrollbar=yes,width=230,height=120");
        fenster.document.open();
        with (fenster.document) {
            write("<html><base target='Frame 0'><body
onBlur='window.close()'>");//Frame0 is name of the display change it, if

            //necessary
            write("<center><h3>Range of the values </h3>Maximum value -
Minimum value</center>");
            <!-- write("<A
href='http://www.htmlgoodies.com/javagoodies'>http://www.htmlgoodi
es.com/javagoodies</A><BR>");
            write("</body></html>");
            }
            fenster.document.close();
        }
    }
<!-- done hiding from old browsers -->
-->
</SCRIPT>

```


E. JavaScript codes to generate the figure 8 (Demonstration of Calculation of SD).

```
<SCRIPT language=JavaScript>  
<!--
```

```
function SetSize()  
{  
    if (frmSD.Ars.value==1)  
        frmSD.Ssize.value=6  
    if (frmSD.Ars.value==2)  
        frmSD.Ssize.value=7  
    if (frmSD.Ars.value==3)  
        frmSD.Ssize.value=8  
    if (frmSD.Ars.value==4)  
        frmSD.Ssize.value=9  
    if (frmSD.Ars.value==5)  
        frmSD.Ssize.value=10  
  
}  
  
function CalSD(mn)  
{  
    n=0  
    SDA=new Array(10)  
    Ar=new Array(15.5, 14.0, 30.5, 15.0, 13.5, 24.5)  
    Br=new Array(15.5, 24.0, 30.5, 15.0, 23.5, 34.5, 15.0)  
    Cr=new Array(35.3, 24.2, 10.1, 35.0, 23.5, 14.2, 35.2, 35.4)  
    Dr=new Array(45.3, 12.2, 23.4, 25.3, 43.1, 24.3, 25.1, 25.1, 21.2)  
    Er=new Array(25.2, 13.1, 33.3, 45.3, 23.2, 11.1, 33.3, 13.3,  
    13.3, 21.1)  
  
    num=parseInt(document.frmSD.Ars.value)  
    mn=parseInt(mn)  
  
    switch(num)  
    {  
        case 1:  
            for (i=0;i<10;++i)  
            {  
                SDA[i]=Ar[i]  
            }  
            n=6  
            break  
        case 2:  
            for (i=0;i<10;++i)  
            {  
                SDA[i]=Br[i]  
            }  
            n=7  
    }  
}
```



break

case 3:

```
for (i=0;i<10;++i)
{
    SDA[i]=Cr[i]
}
n=8
break
```

case 4:

```
for (i=0;i<10;++i)
{
    SDA[i]=Dr[i]
}
n=9
break
```

case 5:

```
for (i=0;i<10;++i)
{
    SDA[i]=Er[i]
}
n=10
break
```

```
    }
val=0.0
for (j=0;j<n;++j)
{
    tot=Math.abs(SDA[j]-mn)
    val+=Math.pow(tot,2)
}
val=val/n
Sval=Math.sqrt(val)
frmSD.TxtSD.value=Sval
}
-->
</SCRIPT>
```




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F. JavaScript codes to generate the figure 9 (Demonstration of easy visualization).

```
<script language="JavaScript">
<!--
function funOnABG()
{
    document.images[0].src="ProMode/ModeABG.gif"
}
function funOut()
{
    document.images[0].src="ProMode/Mode.gif"
}

function funOnDCG()
{
    document.images[0].src="ProMode/ModeDCG.gif"
}

function funOnAB()
{
    document.images[0].src="ProMode/ModeAB.gif"
}

function funOnAG()  University of Moratuwa, Sri Lanka.  
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{
    document.images[0].src="ProMode/ModeAG.gif"
}

function funOnDC()
{
    document.images[0].src="ProMode/ModeDC.gif"
}

function funOnEG()
{
    document.images[0].src="ProMode/ModeEG.gif"
}

function funOnAEG()
{
    document.images[0].src="ProMode/ModeAEG.gif"
}
function funOnFCG()
{
    document.images[0].src="ProMode/ModeFCG.gif"
}
function funOnDC()
{
    document.images[0].src="ProMode/ModeDC.gif"
}
```

```
}  
function funOnGC()  
{  
    document.images[0].src="ProMode/ModeGC.gif"  
}  
function funOnGF()  
{  
    document.images[0].src="ProMode/ModeGF.gif"  
}  
function funOnEG()  
{  
    document.images[0].src="ProMode/ModeEG.gif"  
}  
function funOnPR()  
{  
    document.images[0].src="ProMode/ModePR.gif"  
}  
  
//-->  
</script>
```



ResSearch.asp

```
<html>
<head>
<title> Result to the Client's Request</title>
</head>
<body>
<br><br>
<%
dim myconnection
dim rs
dim reqTip
dim SQLQuery
set myconnection=Server.CreateObject("ADODB.Connection")
myconnection.Open "DSN=serdb"

reqTip=trim(Request.Form("tip"))
SQLQuery=" select * from contents where tip ='" & reqTip & "' "
set recordCollection=myconnection.Execute(SQLQuery) %>

<table align="center" border="0" cellspacing="0" cellpadding="8">
<tr>
<td><h3>Matched Word</h3></td>
<td><h3>Description of the Page</h3></td>
</tr>

<%Do While NOT recordCollection.EOF%>
<tr>
<td><%Response.Write(recordCollection(0))%></td>
<td>
<a href="file:///C:/TeachStat/Info/
<%response.write(trim(recordCollection(1)))%>#
<% response.write(trim(recordCollection(2))) %>">
<%
response.write(trim(recordCollection(3))) %>
</a>
</td>
</tr>
<%recordCollection.MoveNext
loop
myconnection.Close()
set myconnection=Nothing%>

</table>
</body>
</html>
```

I. HTML code to generate the figure 16 (On-line question paper).

```
<html>
<head>
<title> Options</title>
<script language="JavaScript">
<!--
    SelArray=new Array(-1,-1,-1,-1,-1)
    N=5
    M=4
    AnsArray=new Array(3,1,2,3,1)
    WrongArray=new Array(5)

    function CheckStatus(Qnum,Anum)
    {
        SelArray[Qnum]=Anum
    }

    function Total()
    {
        Tot=0
        S=""
        for(j=0;j<N;++j) WrongArray[j]=-1
        for(j=0;j<N;++j)
        {
            if (SelArray[j]==AnsArray[j])
            {
                ++Tot
            }

            if (SelArray[j]!=AnsArray[j])
            {
                WrongArray[j]=0
            }
        }

        document.check.T1.value=Tot
        for(l=0;l<N;++l)
            if(WrongArray[l]==0) S+=l+1+" "
        if (Tot==5)
        {
            S="!!! Congratulations !!!\n You have answered all
                questions correctly"
            document.check.T2.value=S
        }

        if (Tot<5)
            document.check.T2.value="You have answered incorrectly
for the
                questions :\n"+S
    }
-->
</script>
</head>
</html>
```



```

<input type="radio" name="Q4" onClick="CheckStatus(3,0)"> a
<input type="radio" name="Q4" onClick="CheckStatus(3,1)"> e
<input type="radio" name="Q4" onClick="CheckStatus(3,2)"> a, b
and e
<input type="radio" name="Q4" onClick="CheckStatus(3,3)"> b
and e<BR><BR>

```

```

<LI> Calculate the mean of the population of observations below.
74, 59, 125, 62, 46,53, 108, 60, 92, 126, 72, 147.<BR><BR>

```

```

<input type="radio" name="Q5" onClick="CheckStatus(4,0)"> 85
<input type="radio" name="Q5" onClick="CheckStatus(4,1)">
85.33
<input type="radio" name="Q5" onClick="CheckStatus(4,2)"> 86
<input type="radio" name="Q5" onClick="CheckStatus(4,3)">
86.33<BR><BR>

```

```

</OL>
</form>

```

```

<form name="check" method="POST" action="--WEBBOT-SELF--">
<!--webbot bot="SaveResults" U-File="fpweb:/// _private/form_results.txt"
S-Format="TEXT/CSV" S-Label-Fields="TRUE" -->
<blockquote>
<blockquote>
<hr align="center">
<div align="center">
<center>
<table border="0" width="72%">
<tr>
<td width="33%"><input type="button" value="Check Your Score"
name="B3"      onClick="Total()" style="color: #000000"></td>
<td width="9%">
<p align="center"><input type="text" name="T1" size="3"></td>
<td width="58%">
<p align="center"><a href="AnsP1.htm" >See Answers</a></td>
</tr>
</table>
</center>
</div>
<p align="center"><input type="text" name="T2" size="54"></p>
<hr>
<p align="left">&nbsp;</p>
</blockquote>
</blockquote>
</form>
<p align="center">&nbsp;</p>
</body>
</html>

```


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