Лабораторная работа № 2	Студент, группа	Чечеткин И. А.
	Дата выполнения	
	Подпись	
	Дата отчёта	
Введение в разработку WinPhone-приложений	Оценка	
	Подпись	

Цель работы:

1. познакомится с инструментами разработки WinPhone-приложения,

2. разобрать структуру типичного WinPhone-приложения,

3. научиться запускать приложение на эмуляторе.

Калькулятор

Страница приложения:

```
1   <phone:PhoneApplicationPage
2       x:Class="lab_2.MainPage"
3       xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"
4       xmlns:x="http://schemas.microsoft.com/winfx/2006/xaml"
5       xmlns:phone="clr-namespace:Microsoft.Phone.Controls;assembly=Microsoft.Phone"
6       xmlns:shell="clr-namespace:Microsoft.Phone.Shell;assembly=Microsoft.Phone"
7       xmlns:d="http://schemas.microsoft.com/expression/blend/2008"
8       xmlns:mc="http://schemas.openxmlformats.org/markup-compatibility/2006"
9       mc:Ignorable="d" d:DesignWidth="480" d:DesignHeight="768"
10      FontFamily="{StaticResource PhoneFontFamilyNormal}"
11      FontSize="{StaticResource PhoneFontSizeNormal}"
12      Foreground="{StaticResource PhoneForegroundBrush}"
13      SupportedOrientations="Portrait" Orientation="Portrait"
14      shell:SystemTray.IsVisible="True">
15
16      <Grid x:Name="LayoutRoot" Background="Transparent">
17          <Grid.RowDefinitions>
18              <RowDefinition Height="Auto"/>
19              <RowDefinition Height="*"/>
20          </Grid.RowDefinitions>
21
22          <Grid x:Name="ContentPanel" Grid.Row="1" Margin="12,0,12,0">
23              <TextBlock Height="50" HorizontalAlignment="Left" Margin="15,30,0,0" Name="tbf" Text="" VerticalAlignment="Top" Width="427"
                       TextAlignment="Right" FontSize="32" />
24              <TextBox Height="80" HorizontalAlignment="Left" Margin="0,80,0,0" Name="tbin" Text="0" VerticalAlignment="Top" Width="460"
                       TextAlignment="Right" FontSize="32" IsReadOnly="True" />
25              <Button Content="MC" Height="100" HorizontalAlignment="Left" Margin="0,150,0,0" Name="bmc" VerticalAlignment="Top" Width="100"
                       FontSize="26" Click="bmc_Click" />
26              <Button Content="MR" Height="100" HorizontalAlignment="Left" Margin="90,150,0,0" Name="bmr" VerticalAlignment="Top" Width="100"
                       FontSize="26" Click="bmr_Click" />
27              <Button Content="MS" Height="100" HorizontalAlignment="Left" Margin="180,150,0,0" Name="bms" VerticalAlignment="Top" Width="100"
                       FontSize="26" Click="bms_Click" />
28              <Button Content="M+" Height="100" HorizontalAlignment="Left" Margin="270,150,0,0" Name="bmp" VerticalAlignment="Top" Width="100"
                       FontSize="26" Click="bmp_Click" />
29              <Button Content="M−" Height="100" HorizontalAlignment="Left" Margin="360,150,0,0" Name="bmm" VerticalAlignment="Top" Width="100"
                       FontSize="26" Click="bmm_Click" />
30              <Button Content="←" Height="100" HorizontalAlignment="Left" Margin="0,240,0,0" Name="bb" VerticalAlignment="Top" Width="100"
                       FontSize="26" Click="bb_Click" />
31              <Button Content="CE" Height="100" HorizontalAlignment="Left" Margin="90,240,0,0" Name="bce" VerticalAlignment="Top" Width="100"
                       FontSize="26" Click="bce_Click" />
32              <Button Content="C" Height="100" HorizontalAlignment="Left" Margin="180,240,0,0" Name="bc" VerticalAlignment="Top" Width="100"
                       FontSize="26" Click="bc_Click" />
33              <Button Content="±" Height="100" HorizontalAlignment="Left" Margin="270,240,0,0" Name="bpm" VerticalAlignment="Top" Width="100"
                       FontSize="26" Click="bpm_Click" />
34              <Button Content="√" Height="100" HorizontalAlignment="Left" Margin="360,240,0,0" Name="bsqrt" VerticalAlignment="Top" Width="100"
                       FontSize="26" Click="bsqrt_Click" />
35              <Button Content="7" Height="100" HorizontalAlignment="Left" Margin="0,330,0,0" Name="b7" VerticalAlignment="Top" Width="100"
                       FontSize="26" Background="#FF2E2E2E" Click="bn_Click" Tag="7" />
36              <Button Content="8" Height="100" HorizontalAlignment="Left" Margin="90,330,0,0" Name="b8" VerticalAlignment="Top" Width="100"
                       FontSize="26" Background="#FF2E2E2E" Click="bn_Click" Tag="8" />
37              <Button Content="9" Height="100" HorizontalAlignment="Left" Margin="180,330,0,0" Name="b9" VerticalAlignment="Top" Width="100"
                       FontSize="26" Background="#FF2E2E2E" Click="bn_Click" Tag="9" />
38              <Button Content="/" Height="100" HorizontalAlignment="Left" Margin="270,330,0,0" Name="bdiv" VerticalAlignment="Top" Width="100"
                       FontSize="26" Click="bcom_Click" Tag="3" />
39              <Button Content="%" Height="100" HorizontalAlignment="Left" Margin="360,330,0,0" Name="bper" VerticalAlignment="Top" Width="100"
                       FontSize="26" Click="bper_Click" />
40              <Button Content="4" Height="100" HorizontalAlignment="Left" Margin="0,420,0,0" Name="b4" VerticalAlignment="Top" Width="100"
                       FontSize="26" Background="#FF2E2E2E" Click="bn_Click" Tag="4" />
41              <Button Content="5" Height="100" HorizontalAlignment="Left" Margin="90,420,0,0" Name="b5" VerticalAlignment="Top" Width="100"
                       FontSize="26" Background="#FF2E2E2E" Click="bn_Click" Tag="5" />
42              <Button Content="6" Height="100" HorizontalAlignment="Left" Margin="180,420,0,0" Name="b6" VerticalAlignment="Top" Width="100"
                       FontSize="26" Background="#FF2E2E2E" Click="bn_Click" Tag="6" />
43              <Button Content="*" Height="100" HorizontalAlignment="Left" Margin="270,420,0,0" Name="bmul" VerticalAlignment="Top" Width="100"
                       FontSize="26" Click="bcom_Click" Tag="4" />
```

```xml
44              <Button Content="1/x" Height="100" HorizontalAlignment="Left" Margin="360,420,0,0" Name="bx" VerticalAlignment="Top" Width="100"
                    FontSize="26" Click="bx_Click" />
45              <Button Content="1" Height="100" HorizontalAlignment="Left" Margin="0,510,0,0" Name="b1" VerticalAlignment="Top" Width="100"
                    FontSize="26" Background="#FF2E2E2E" Click="bn_Click" Tag="1" />
46              <Button Content="2" Height="100" HorizontalAlignment="Left" Margin="90,510,0,0" Name="b2" VerticalAlignment="Top" Width="100"
                    FontSize="26" Background="#FF2E2E2E" Click="bn_Click" Tag="2" />
47              <Button Content="3" Height="100" HorizontalAlignment="Left" Margin="180,510,0,0" Name="b3" VerticalAlignment="Top" Width="100"
                    FontSize="26" Background="#FF2E2E2E" Click="bn_Click" Tag="3" />
48              <Button Content="−" Height="100" HorizontalAlignment="Left" Margin="270,510,0,0" Name="bm" VerticalAlignment="Top" Width="100"
                    FontSize="26" Click="bcom_Click" Tag="2" />
49              <Button Content="=" Height="190" HorizontalAlignment="Left" Margin="360,0,0,68" Name="beq" VerticalAlignment="Bottom" Width="100"
                    FontSize="26" Click="bcom_Click" Tag="0" />
50              <Button Content="0" Height="100" HorizontalAlignment="Left" Margin="0,600,0,0" Name="b0" VerticalAlignment="Top" Width="190"
                    FontSize="26" Background="#FF2E2E2E" Click="bn_Click" Tag="0" />
51              <Button Content="." Height="100" HorizontalAlignment="Left" Margin="180,600,0,0" Name="bd" VerticalAlignment="Top" Width="100"
                    FontSize="26" Background="#FF2E2E2E" Click="bd_Click" />
52              <Button Content="+" Height="100" HorizontalAlignment="Left" Margin="270,600,0,0" Name="bp" VerticalAlignment="Top" Width="100"
                    FontSize="26" Click="bcom_Click" Tag="1" />
53              <TextBlock Height="50" HorizontalAlignment="Left" Margin="15,700,0,0" Name="tbm" Text="" VerticalAlignment="Top" Width="427"
                    TextAlignment="Right" FontSize="24" DataContext="{Binding}" />
54          </Grid>
55      </Grid>
56
57  </phone:PhoneApplicationPage>
```

Код приложения:

```csharp
1   using System;
2   using System.Collections.Generic;
3   using System.Linq;
4   using System.Net;
5   using System.Windows;
6   using System.Windows.Controls;
7   using System.Windows.Documents;
8   using System.Windows.Input;
9   using System.Windows.Media;
10  using System.Windows.Media.Animation;
11  using System.Windows.Shapes;
12  using Microsoft.Phone.Controls;
13
14  namespace lab_2
15  {
16      public partial class MainPage : PhoneApplicationPage
17      {
18          double memory = 0;
19          double first = 0;
20          bool error = false;
21          bool dot_set = false;
22          bool but_click = false;
23          int last_operation;
24          enum ops {eq, plus, minus, div, mul};
25
26          public MainPage()
27          {
28              InitializeComponent();
29          }
30
31          private void Calc(int op)
32          {
33              if (tbf.Text == "")
34              {
35                  if (op != (int)ops.eq)
36                  {
37                      first = Convert.ToDouble(tbin.Text);
38                      tbf.Text = first.ToString();
39                      last_operation = op;
40                      dot_set = false;
41                      switch (last_operation)
42                      {
43                          case (int)ops.plus:
44                              {
45                                  tbf.Text += " +";
46                                  break;
47                              }
48                          case (int)ops.minus:
49                              {
50                                  tbf.Text += " −";
51                                  break;
52                              }
53                          case (int)ops.div:
54                              {
55                                  tbf.Text += " /";
56                                  break;
57                              }
58                          case (int)ops.mul:
59                              {
60                                  tbf.Text += " *";
61                                  break;
62                              }
63                      }
64                  }
65              }
66              else
67              {
68                  double second = Convert.ToDouble(tbin.Text);
69                  double temp = first;
70                  dot_set = false;
71                  error = false;
72                  switch (last_operation)
73                  {
74                      case (int)ops.plus:
75                          {
```

```csharp
 76                                temp = first + second;
 77                                break;
 78                            }
 79                        case (int)ops.minus:
 80                            {
 81                                temp = first - second;
 82                                break;
 83                            }
 84                        case (int)ops.div:
 85                            {
 86                                if (second != 0)
 87                                    temp = first / second;
 88                                else
 89                                {
 90                                    tbin.Text = "ERROR";
 91                                    error = true;
 92                                }
 93                                break;
 94                            }
 95                        case (int)ops.mul:
 96                            {
 97                                temp = first * second;
 98                                break;
 99                            }
100                    }
101                    if (!error)
102                    {
103                        tbin.Text = "0";
104                        tbf.Text = temp.ToString();
105                        first = temp;
106                        switch (op)
107                        {
108                            case (int)ops.plus:
109                                {
110                                    tbf.Text += " +";
111                                    break;
112                                }
113                            case (int)ops.minus:
114                                {
115                                    tbf.Text += " -";
116                                    break;
117                                }
118                            case (int)ops.div:
119                                {
120                                    tbf.Text += " /";
121                                    break;
122                                }
123                            case (int)ops.mul:
124                                {
125                                    tbf.Text += " *";
126                                    break;
127                                }
128                            case (int)ops.eq:
129                                {
130                                    tbf.Text = "";
131                                    tbin.Text = first.ToString();
132                                    break;
133                                }
134                        }
135                        last_operation = op;
136                    }
137                }
138                but_click = false;
139            }
140
141            private void bn_Click(object sender, RoutedEventArgs e)
142            {
143                Button _button = (Button)sender;
144                int num = Convert.ToInt32(_button.Tag.ToString());
145                if (!error)
146                {
147                    if (tbin.Text == "0" || !but_click)
148                        tbin.Text = num.ToString();
149                    else
150                        tbin.Text += num.ToString();
151                    but_click = true;
152                }
153            }
154
155            private void bd_Click(object sender, RoutedEventArgs e)
156            {
157                if (!error && !dot_set)
158                {
159                    if (!but_click)
160                        tbin.Text = "0";
161                    tbin.Text += ",";
162                    dot_set = true;
163                    but_click = true;
164                }
165            }
166
167            private void bc_Click(object sender, RoutedEventArgs e)
168            {
169                tbin.Text = "0";
170                tbf.Text = "";
171                first = 0;
172                last_operation = 0;
173                error = false;
174                dot_set = false;
175                bp.Background = new SolidColorBrush(Color.FromArgb(0x00, 0, 0, 0));
176                bm.Background = new SolidColorBrush(Color.FromArgb(0x00, 0, 0, 0));
177                bdiv.Background = new SolidColorBrush(Color.FromArgb(0x00, 0, 0, 0));
178                bmul.Background = new SolidColorBrush(Color.FromArgb(0x00, 0, 0, 0));
```

```
179                    }
180
181            private void bce_Click(object sender, RoutedEventArgs e)
182            {
183                tbin.Text = "0";
184                error = false;
185                dot_set = false;
186            }
187
188            private void bb_Click(object sender, RoutedEventArgs e)
189            {
190                if (!error)
191                {
192                    if (tbin.Text.Length > 1)
193                        tbin.Text = tbin.Text.Substring(0, tbin.Text.Length - 1);
194                    else
195                        tbin.Text = "0";
196                    if (!tbin.Text.Contains(','))
197                        dot_set = false;
198                }
199            }
200
201            private void bms_Click(object sender, RoutedEventArgs e)
202            {
203                if (!error)
204                    memory = Convert.ToDouble(tbin.Text);
205                tbm.Text = String.Format("memory: {0}", memory);
206            }
207
208            private void bmr_Click(object sender, RoutedEventArgs e)
209            {
210                tbin.Text = memory.ToString();
211                error = false;
212                if (tbin.Text.Contains(','))
213                    dot_set = true;
214            }
215
216            private void bmp_Click(object sender, RoutedEventArgs e)
217            {
218                if (!error)
219                    memory += Convert.ToDouble(tbin.Text);
220                tbm.Text = String.Format("memory: {0}", memory);
221            }
222
223            private void bmm_Click(object sender, RoutedEventArgs e)
224            {
225                if (!error)
226                    memory -= Convert.ToDouble(tbin.Text);
227                tbm.Text = String.Format("memory: {0}", memory);
228            }
229
230            private void bmc_Click(object sender, RoutedEventArgs e)
231            {
232                memory = 0;
233                tbm.Text = "";
234            }
235
236            private void bsqrt_Click(object sender, RoutedEventArgs e)
237            {
238                if (!error)
239                {
240                    double temp = Convert.ToDouble(tbin.Text);
241                    if (temp >= 0)
242                        tbin.Text = Math.Sqrt(temp).ToString();
243                    else
244                    {
245                        tbin.Text = "ERROR";
246                        error = true;
247                    }
248                }
249            }
250
251            private void bx_Click(object sender, RoutedEventArgs e)
252            {
253                if (!error)
254                {
255                    double temp = Convert.ToDouble(tbin.Text);
256                    if (temp != 0)
257                        tbin.Text = (1 / temp).ToString();
258                    else
259                    {
260                        tbin.Text = "ERROR";
261                        error = true;
262                    }
263                }
264            }
265
266            private void bper_Click(object sender, RoutedEventArgs e)
267            {
268                if (!error)
269                {
270                    double temp = Convert.ToDouble(tbin.Text);
271                    temp *= first / 100;
272                    tbin.Text = temp.ToString();
273                }
274            }
275
276            private void bpm_Click(object sender, RoutedEventArgs e)
277            {
278                if (!error)
279                    tbin.Text = (-Convert.ToDouble(tbin.Text)).ToString();
280            }
281
```

```csharp
282        private void bcom_Click(object sender, RoutedEventArgs e)
283        {
284            Button _button = (Button)sender;
285            if (!error)
286            {
287                int op = Convert.ToInt32(_button.Tag.ToString());
288                Calc(op);
289                light(sender);
290            }
291        }
292
293        private void light(object sender)
294        {
295            bp.Background = new SolidColorBrush(Color.FromArgb(0x00, 0, 0, 0));
296            bm.Background = new SolidColorBrush(Color.FromArgb(0x00, 0, 0, 0));
297            bmul.Background = new SolidColorBrush(Color.FromArgb(0x00, 0, 0, 0));
298            bdiv.Background = new SolidColorBrush(Color.FromArgb(0x00, 0, 0, 0));
299            Button _button = (Button)sender;
300            if (_button != beq)
301                _button.Background = new SolidColorBrush(Color.FromArgb(0xff, 0x2e, 0x2e, 0x2e));
302        }
303
304    }
305 }
```

Скриншот приложения: