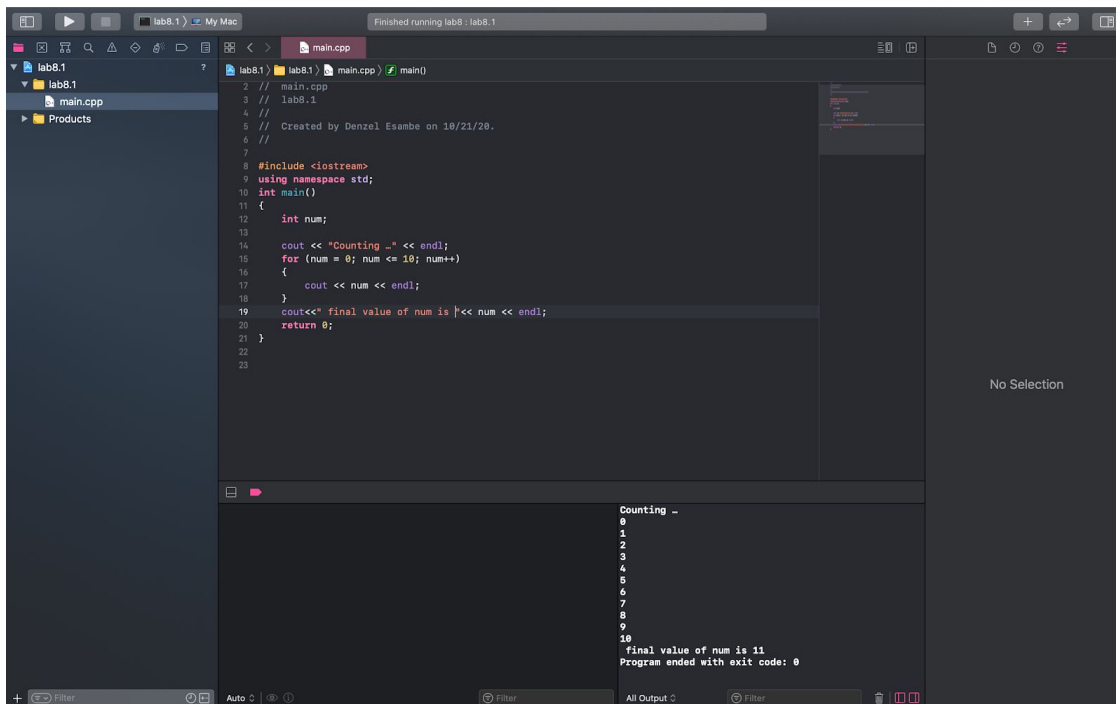


## Lab 8

### Denzel Esambe

#### Lab 8.1



The screenshot shows a C++ IDE with a project named 'lab8.1'. The file 'main.cpp' is open, containing the following code:

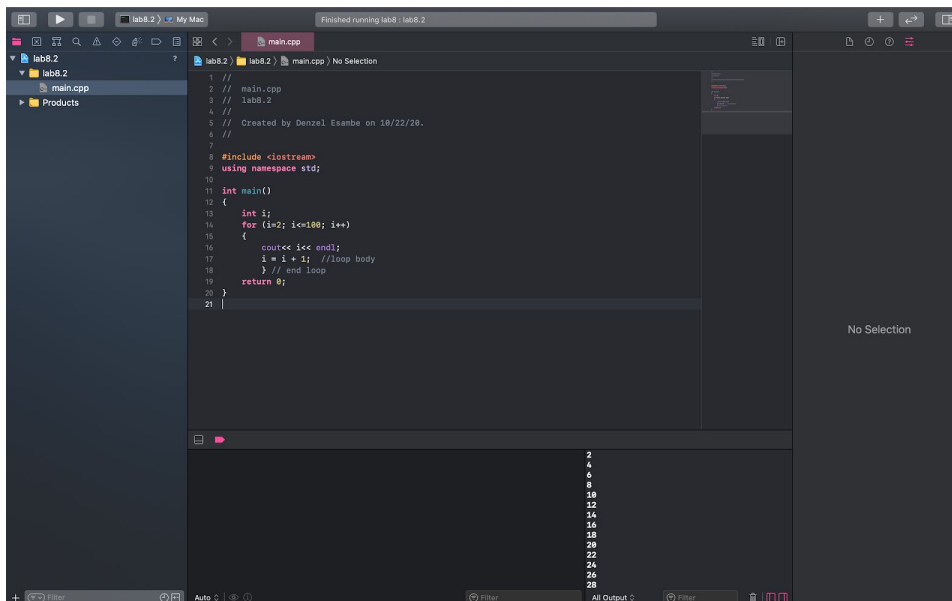
```
1 //
2 // main.cpp
3 // lab8.1
4 //
5 // Created by Denzel Esambe on 10/21/20.
6 //
7
8 #include <iostream>
9 using namespace std;
10 int main()
11 {
12     int num;
13
14     cout << "Counting _" << endl;
15     for (num = 0; num <= 10; num++)
16     {
17         cout << num << endl;
18     }
19     cout << "final value of num is " << num << endl;
20     return 0;
21 }
```

The output window shows the following text:

```
Counting _
0
1
2
3
4
5
6
7
8
9
10
final value of num is 11
Program ended with exit code: 0
```

#### Lab 8.2

#### 3. For loop



The screenshot shows a C++ IDE with a project named 'lab8.2'. The file 'main.cpp' is open, containing the following code:

```
1 //
2 // main.cpp
3 // lab8.2
4 //
5 // Created by Denzel Esambe on 10/22/20.
6 //
7
8 #include <iostream>
9 using namespace std;
10
11 int main()
12 {
13     int i;
14     for (i=2; i<=100; i++)
15     {
16         cout << i << endl;
17         i = i + 1; //loop body
18     } // end loop
19     return 0;
20 }
```

The output window shows the following text:

```
2
4
6
8
10
12
14
16
18
20
22
24
26
28
```

The screenshot shows a C++ IDE with a project named 'lab8.2'. The file 'main.cpp' is open, containing the following code:

```
1 //  
2 // main.cpp  
3 // lab8.2  
4 //  
5 // Created by Denzel Esambe on 10/22/20.  
6 //  
7 //  
8 #include <iostream>  
9 using namespace std;  
10  
11 int main()  
12 {  
13     for (int i = 2; i <= 72; i += 2)  
14     {  
15         cout << i << " ";  
16         if (i % 10 == 0) cout << "\n";  
17     }  
18 }
```

The output window shows the following numbers: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72.

The screenshot shows the same C++ IDE with the same project 'lab8.2'. The file 'main.cpp' is open, containing the following code:

```
1 //  
2 // main.cpp  
3 // lab8.2  
4 //  
5 // Created by Denzel Esambe on 10/22/20.  
6 //  
7 //  
8 #include <iostream>  
9 using namespace std;  
10  
11 int main()  
12 {  
13     for (int i = 1; i <= 100; i += 2)  
14     {  
15         cout << i << " ";  
16         if (i % 10 == 0) cout << "\n";  
17     }  
18 }
```

The output window shows the following numbers: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77, 79, 81, 83, 85, 87, 89, 91, 93, 95, 97, 99.

- Lab 8.3
- 4. 12 times
- 5. 60 times

This screenshot shows a C++ IDE with a file named `main.cpp`. The code defines a `main` function that uses nested loops to print times. The outer loop iterates over hours from 0 to 11, and the inner loop iterates over minutes from 0 to 59. The output shows the first 11 hours, each followed by minutes 00 through 09.

```
1 // main.cpp
2 // 8.3
3 // Created by Denzel Esambe on 10/24/20.
4
5 #include <iostream>
6 using namespace std;
7 int main()
8 {
9     int hour, min;
10    for(hour = 0; hour <= 11; hour++)
11    {
12        for(min = 0; min <= 59; min++)
13        {
14            cout << hour << ":" << min << " AM" << endl;
15        }
16    }
17    return 0;
18 }
```

The output window displays the following times:

```
0:00 AM
0:01 AM
0:02 AM
0:03 AM
0:04 AM
0:05 AM
0:06 AM
0:07 AM
0:08 AM
0:09 AM
```

This screenshot shows the same C++ IDE with the `main.cpp` file. The code is identical to the one in the first screenshot, but the output window now displays times from 0:00 AM to 0:35 AM. This suggests that the program was run again, and the output was scrolled down to show later times.

```
1 // main.cpp
2 // 8.3
3 // Created by Denzel Esambe on 10/24/20.
4
5 #include <iostream>
6 using namespace std;
7 int main()
8 {
9     int hour, min;
10    for(hour = 0; hour <= 11; hour++)
11    {
12        for(min = 0; min <= 59; min++)
13        {
14            cout << hour << ":" << min << " AM" << endl;
15        }
16    }
17    return 0;
18 }
```

The output window displays the following times:

```
0:00 AM
0:01 AM
0:02 AM
0:03 AM
0:04 AM
0:05 AM
0:06 AM
0:07 AM
0:08 AM
0:09 AM
0:10 AM
0:11 AM
0:12 AM
0:13 AM
0:14 AM
0:15 AM
0:16 AM
0:17 AM
0:18 AM
0:19 AM
0:20 AM
0:21 AM
0:22 AM
0:23 AM
0:24 AM
0:25 AM
0:26 AM
0:27 AM
0:28 AM
0:29 AM
0:30 AM
0:31 AM
0:32 AM
0:33 AM
0:34 AM
0:35 AM
```

The screenshot shows a C++ IDE with a file named `main.cpp`. The code is as follows:

```
1 // main.cpp
2 // 8.3
3 // Created by Denzel Esambe on 10/24/20.
4
5 #include <iostream>
6 using namespace std;
7 int main()
8 {
9     int hour, min;
10    for(hour = 00; hour <= 11; hour++)
11    {
12    }
```

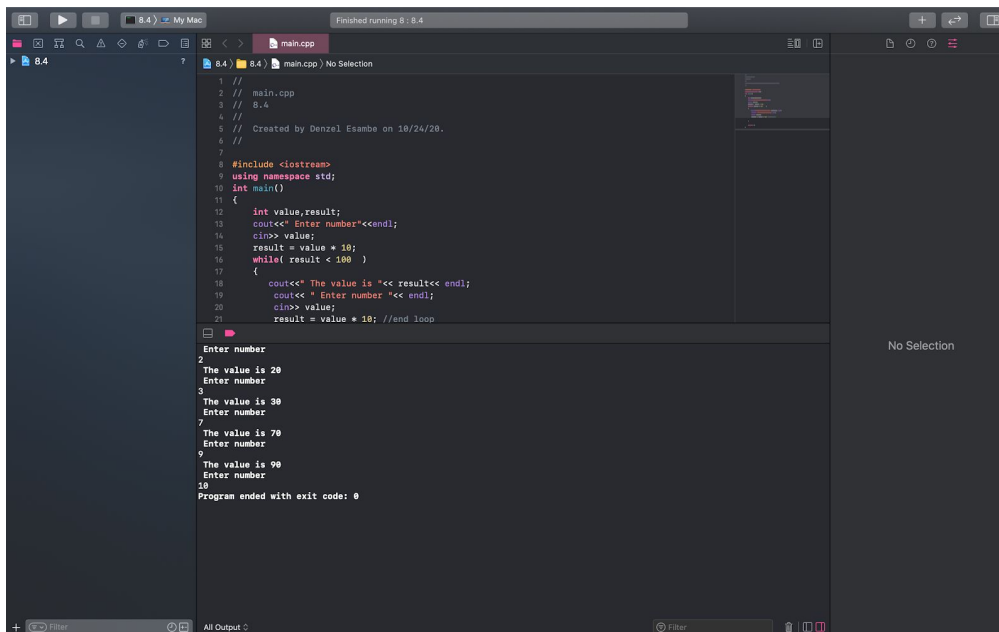
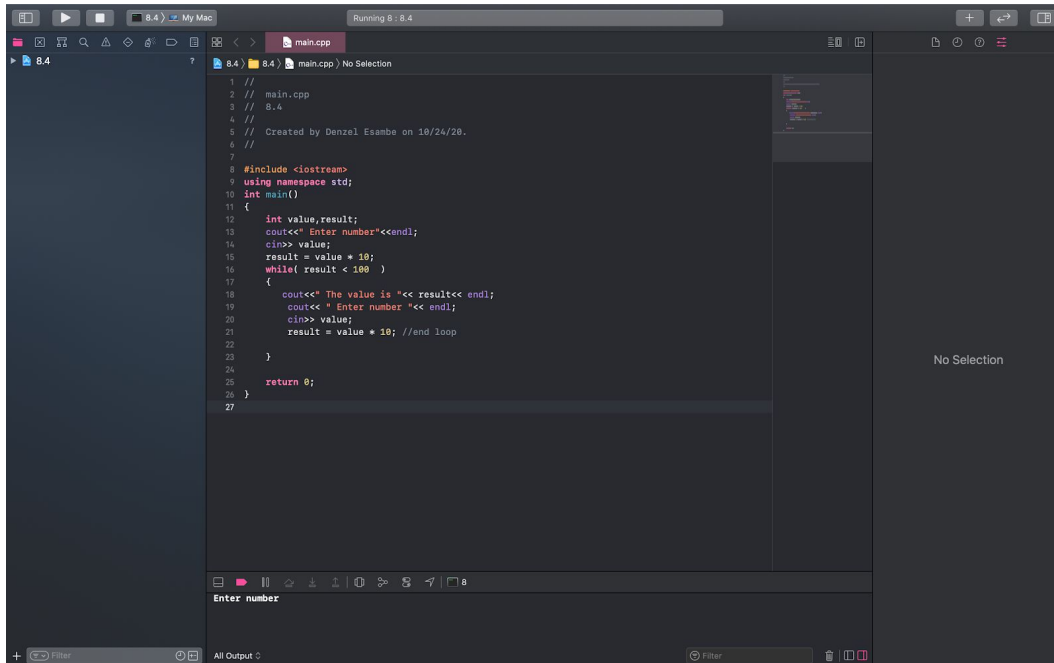
The output window displays a list of times from 0:07 AM to 1:32 AM, with one time missing (1:00 AM). The IDE status bar at the bottom indicates "Auto" and "All Output".

The screenshot shows the same C++ IDE with the same `main.cpp` file. The code is identical to the previous screenshot:

```
1 // main.cpp
2 // 8.3
3 // Created by Denzel Esambe on 10/24/20.
4
5 #include <iostream>
6 using namespace std;
7 int main()
8 {
9     int hour, min;
10    for(hour = 00; hour <= 11; hour++)
11    {
12    }
```

The output window displays a list of times from 11:25 AM to 11:59 AM. The IDE status bar at the bottom indicates "Auto" and "All Output".

Lab 8.4



## Lab 8.5

The screenshot shows a C++ IDE with a project named "8.5" and a file named "main.cpp". The code in "main.cpp" is as follows:

```
1 // main.cpp
2 // 8.5
3 // Created by Denizl Esame on 18/25/20..
4
5 #include <iostream>
6 using namespace std;
7 int main()
8 {
9     int i;
10    for(i=0; i<=1000; i++)
11    {
12        cout<< i<< endl;
13        i = i + 9;
14    } // and loop
15
16    return 0;
17 }
```

The output window shows the following numbers printed in increments of 10:

```
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
```

The screenshot shows the same C++ IDE with the same project and file. The code in "main.cpp" is as follows:

```
1 // main.cpp
2 // 8.5
3 // Created by Denizl Esame on 18/25/20..
4
5 #include <iostream>
6 using namespace std;
7 int main()
8 {
9     int i;
10    for(i=0; i<=1000; i++)
11    {
12        cout<< i<< endl;
13    }
```

The output window shows the following numbers printed in increments of 10:

```
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
300
310
320
330
340
350
```

The screenshot shows a C++ IDE with a project named "8.5". The file explorer on the left shows a folder "8.5" containing a file "main.cpp". The code editor displays the following code:

```
1 // main.cpp
2 // 8.5
3 // Created by Denzel Esambe on 10/25/20.
4
5 #include <iostream>
6 using namespace std;
7 int main()
8 {
9     int i;
10    for(i=0;i<=1000; i++)
11    {
12        cout<<endl;
13    }
14 }
```

The output window on the right shows the following output:

```
600
610
620
630
640
650
660
670
680
690
700
710
720
730
740
750
760
770
780
790
800
810
820
830
840
850
860
870
880
890
900
910
920
930
940
950
960
970
980
990
1000
Program ended with exit code: 0
```

## Lab 8.6

The screenshot shows a C++ IDE with a project named "8.6". The file explorer on the left shows a folder "8.6" containing a file "main.cpp". The code editor displays the following code:

```
1 //
2 // main.cpp
3 // 8.6
4 //
5 // Created by Denzel Esambe on 10/25/20.
6 //
7
8 #include <iostream>
9 using namespace std;
10 int main()
11 {
12     int age;
13     do
14     {
15         cout<<"What is your age"<<endl;
16         cin>>age;
17         cout<<" You are "<<age<<" Years old"<<endl;
18     } while( age>0);
19     return 0;
20 }
21
22
23
```

The output window on the right shows the following output:

```
No Selection
```

