

Devin Hardy

CS 372

```
7. a.  'a', 'e'      b.  'h', 'c'
      'b', 'd'      return 0
      'c', 'c'
      Return 0
```

- 11. Does the math of n factorial
- 12. Adds Sequential Numbers
- 13. Finds out how many times n is divisible to 2
- 14. Adds the digits of n together
- 15. Returns the digit in n furthest to the left

21, 23, 27, 28, 29, 33

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//21, 23, 27, 28, 29, 33

```
#include <iostream>
```

```
#include <fstream>
```

```
#include <iomanip>
```

```
#include <cstdlib>
```

```
using namespace std;
```

```
unsigned digits(unsigned val)
```

```
{
```

```
    if(val == 0)
        return 0;
    //else
        return 1 + digits(val /10);
}
```

```
void PrintReverse(int val)
{
    if(val == 0)
        return;

    PrintReverse(val / 10);
    cout << val % 10;
}
```

```
void ReverseArray(int ary[], int first, int last)
{
    int temp;
    if(first > last)
        return;
    temp = ary[first];
    ary[first] = ary[last];
    ary[last] = temp;
    ReverseArray(ary, first + 1, last - 1);
}
```

```
int SumArray(int ary[], int n)
```

```
{  
    if(n == 0)  
        return 0;  
    return ary[n] + SumArray(ary, n - 1);  
}
```

// If 44 did not find

int Location(int ary[], int first, int last, int elm)

```
{  
    if(first > last)  
        return 44;  
    if(ary[first] == elm)  
        return first;  
    if(ary[last] == elm)  
        return last;  
    ReverseArray(ary, first + 1, last - 1);  
}
```

int main()

```
{  
    int val = 1467;  
    int math;  
    int spot;  
    int ary[10];  
    int bry[10];
```

```
for(int i = 0; i < 10; i++)
    ary[i] = i+1;
cout << 21 << endl;
cout << val << endl;
math = digits(val);
cout << "Number of digits = " << math << endl;
cout << 23 << endl;
PrintReverse(val);
cout << endl;

cout << 27 << endl << endl;

cout << 28 << endl;
math = SumArray(ary, 9);
cout << "Sum of Array = " << math << endl;

for(int i = 0; i < 10; i++)
    bry[i] = i*2;

cout << 29 << endl;

cout << endl;

cout << 33 << endl;

return 0;
}
```

```
21
1467
Number of digits = 4
23
1467
27

28
Sum of Array = 54
29

33
```

Hailstones

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//hailstone

```
#include <iostream>
```

```
#include <fstream>
```

```
#include <iomanip>
```

```
#include <cstdlib>
```

```
using namespace std;
```

```
int hailstone(int val)
```

```
{
```

```
    if(val == 1)
```

```
        return 1;
```

```
    if(val % 2 == 0)
```

```
        return 1 + hailstone(val / 2);
```

```

    if(val % 2 == 1)
        return 1 + hailstone(val * 3 + 1);
}

```

```

int main()
{
    int val1 = 1979;
    int val2 = 115270;
    cout << "Test 1" << endl;
    cout << hailstone(val1) << endl;
    cout << "Test 2" << endl;
    cout << hailstone(val2) << endl;
    return 0;
}

```

```

Test 1
144
Test 2
80

```

```

double sumover(unsigned n)
{
    if(n == 0)
        return 0;
    return (1.0 / n) + (sumover(n-1));
}

```

```
int main()
{
    int val = 4;
    double sum;
    sum = sumover(val);
    cout << sum;
    return 0;
}
```

```
2.08333
Process
Press an
```

```
void fillAryBack(int *ary, int val)
{
    if(val == 0)
        return;
    *ary = val;
    fillAryBack(ary + 1, val - 1);
}
```

```
void fillAryForw(int *ary, int val)
{
    if(val == 33)
        return;
```

```
    fillAryForw(ary + 1, val + 1);  
    *ary = val;  
}
```

```
int main()  
{  
    int ary[32];  
    int bry[32];  
    int val1 = 32;  
    int val2 = 1;  
    fillAryBack(ary, val1);  
    for(int i = 0; i < 32; i++)  
    {  
        cout << ary[i] << " ";  
        if((i + 1) % 5 == 0)  
            cout << endl;  
    }  
    cout << endl << endl;  
  
    fillAryForw(bry, val2);  
    for(int i = 0; i < 32; i++)  
    {  
        cout << bry[i] << " ";  
        if((i + 1) % 5 == 0)  
            cout << endl;  
    }  
  
    return 0;
```



```
}
```

```
32 31 30 29 28  
27 26 25 24 23  
22 21 20 19 18  
17 16 15 14 13  
12 11 10 9 8  
7 6 5 4 3  
2 1
```

```
1 2 3 4 5  
6 7 8 9 10  
11 12 13 14 15  
16 17 18 19 20  
21 22 23 24 25  
26 27 28 29 30  
31 32
```

```
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```

```
//CS372
```

```
//ASCII
```

```
#include <iostream>
```

```
#include <fstream>
```

```
#include <iomanip>
```

```
#include <cstdlib>
```

```
using namespace std;
```

```
// 1 7 9 8 6 3 7 5
```

```
int ASCII(char word[], int val)
```

```
{
```

```
    if(val == 0)
```

```
        return 0;
```

```
    return ASCII(word, --val) * 10 + (word[val] - '0');  
}
```

```
int main()  
{  
    char ints1[] = {'1', '7', '9', '8', '6', '3', '7', '5'};  
    char ints2[] = {'7', '4', '3', '4', '5', '3'};  
    int chars1;  
    int chars2;  
    chars1 = ASCII(ints1, 8);  
    chars2 = ASCII(ints2, 6);  
  
    cout << "Number 1" << endl << chars1 << endl;  
    cout << "Number 2" << endl << chars2 << endl;  
  
    return 0;  
}
```

```
Number 1  
17986375  
Number 2  
743453
```

```
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```

```
//CS372
```

```
//Miles Ran
```

```
#include <iostream>
```

```
#include <fstream>
```

```
#include <iomanip>
```

```
#include <cstdlib>
```

```
using namespace std;
```

```
void Running(int times)
```

```
{
```

```
    if((5*times)>= 60)
```

```
        return;
```

```
    cout << setw(3) << (5 * times) << setw(16) << fixed << setprecision(3) << ((0.82 * times) - (0.017 *  
(times - 1))) << endl;
```

```
    Running(times + 1);
```

```
}
```

```
int main()
```

```
{
```

```
    int time = 1;
```

```
    cout << "Minutes " << setw(20) << "Miles Traversed" << endl;
```

```
    Running(time);
```

```
    return 0;
```

```
}
```

Minutes	Miles Traversed
5	0.820
10	1.623
15	2.426
20	3.229
25	4.032
30	4.835
35	5.638
40	6.441
45	7.244
50	8.047
55	8.850

Time it took to move 100 disks on computer

24 Hours

Time it would take me

401,000,000 Years