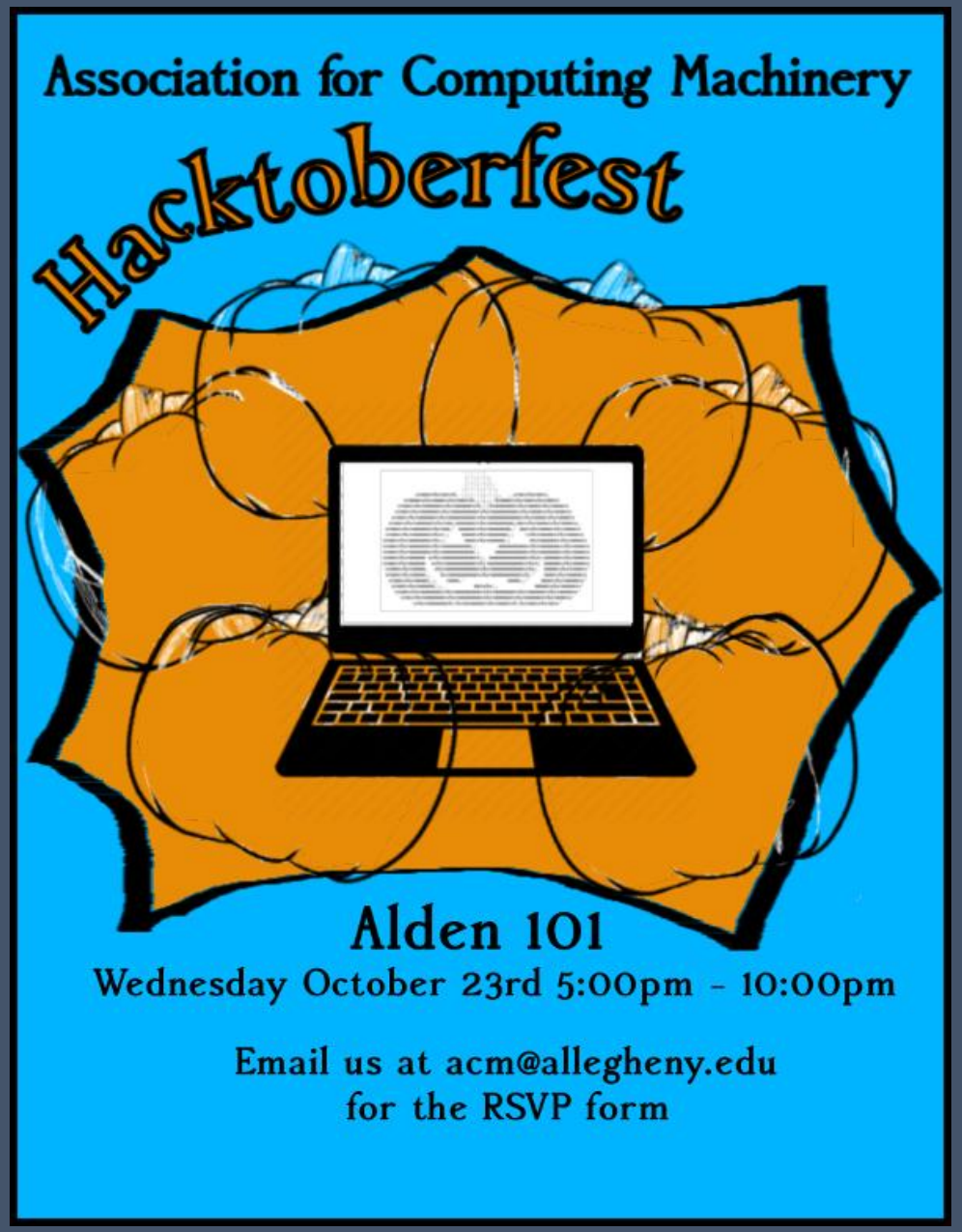
# CMPSC 100

Computational Expression




Participate in a (not so ancient) October tradition…

(no, not the World Series)

# HACKTOBERFEST

Wednesday, 23 October
Alden 101
5:00 - 10:00 PM

# Review sessions

- Based on feedback, I will hold the review session on:

FRIDAY, 25 OCTOBER 12:00PM – 1:00PM, ALDEN 109

- The review repository (with guidelines) is posted to GitHub, the link is in the #general tab in our Slack.
  - You do not need to attend the review session to complete the assignment, but it is highly suggested.
  - If the above review time does not work for you, please schedule office hours.
- See me during office hours for any questions you have.

# Statements

```
int a = 5;
```

assignment

```
System.out.println("Hello, World!");
```

method call

```
if (a < 6) {
  a++;
}
```

"if" statement (conditional)

# while statements

- Create a “loop” in a program’s flow-of-control.
- Test a condition over and over to determine whether or not to continue.
  - This test is a boolean test meaning conditions are true/false.
- Each “loop” is known as an iteration.
- The loop keeps doing work until the given condition is met.

# while statements

- Appears in the form

```
while (condition) {
  /*
   * Tasks to “iterate”
   */
}
```

boolean condition

```
int count = 9;
while (count >= 0) {
  System.out.println(count + 1);
  count--;
}
System.out.println("LIFTOFF")
```

The "decrement"

```
10
9
8
7
6
5
4
3
2
1
LIFTOFF
```

```
int count = 0;
int shift = 4;
String originalWord = “Caesar!”;
String encipheredWord new String();
int wordLen = originalWord.length()
while (count < wordLen - 1) {
  encipheredWord += (char)originalWord.charAt(count) + 4;
  count++;
}
System.out.println(originalWorld + “\n” + encipheredWord);
```

```
Caesar!
Geiwev%
```

# Odd and Even number sorter

We need to track the number currently being tested

Given the set of numbers 1…100:

- Print “Odd” for every odd number.
- Print “Even” for each even number.

We need some kind of test for this…what might that be?

# Update `class-activities` repository

In the main folder of *your* class-activites repository:

```
git pull download master

cd 21-October/in-class
```

```
public static void main(String[] args) {
  int number = 1;
  while (number <= 100) {
    if (number % 2 == 0) {
      System.out.println(number + ": even");
    } else {
      System.out.println(number + ": odd");
    }
    number++;
  }
}
```

Tracks our numbers

Test for even numbers

Increases number by 1

The "increment"

```
public static void main(String[] args) {
  int number = 1;
  while (number <= 100) {
    System.out.print(number + ": ");
    if (number % 2 == 0) {
      System.out.println("even");
    } else {
      System.out.println("odd");
    }
    number++;
  }
}
```

Tracks our numbers

Test for even numbers

Increases number by 1

# Testing

Use the `gradle run` command to test

# Teaching and old computer old tricks

In a world where there’s a computer which doesn’t understand the + or - operator, somehow we need to add and subtract numbers…

Without either operator how can we do it?

# Teaching and old computer old tricks

- In this problem, `1 + 2` or `3 - 4` doesn't work intuitively.
- We have:
  - The increment (`++`)
  - The decrement (`--`)
- Somehow we have to cobble together how adding and subtracting can work in terms of `while` loops.
- There's a solution in the `after-class` folder in today's `class-activities` content.

## ADDING

```
while (b != 0) {
  a++;
  b--;
}
```

## SUBTRACTING

```
while (b != 0) {
  a--;
  b--;
}
```

In both cases, a is the result.

## CODE FROM MAIN METHOD USING SUM

```
Sum sum = new Sum(a,b);
System.out.println("The sum is " + sum);
```

*JSS* pg. 152-154

## CODE IMPLEMENTING SUM (Sum.java)

```
public class Sum {

  private final int a;

  public Sum(int a, int b) {
    while (b != 0) {
      a++;
      b--;
    }
    this.a = a;
  }

  public String toString(){
    return Integer.toString(this.a);
  }
}
```

# after-class folder

Test the content of the after-class folder using:

```
gradle -q --console plain run
```