CSCI251/CSCI851 Spring-2019
Advanced Programming (**LT11**)

Lecture Tutorial 11

From the Lab:

```
int main() {
        const char *s  = u8"\u0444";
        cout << s << endl;
}
```

- The Unicode doesn't seem to work with the standard Bitvise terminal ☹
- It does across SSH Secure Shell Client …

```
class area {
  friend ostream& operator<<(ostream &, const area &);
  private:
      float number;
  public:
      area( float input) : number(input){}
};

ostream& operator<<(ostream& os, const area & input) {
         os << input.number << "m\u00B2";
    return os;
}

int main() {
    float value=5.7;
    cout << area(value) <<endl;
}
```

```
template <typename T>
void showData(T x, int number, char symbol)
{
  for(int i=0; i < number; ++i)
    cout << symbol;
  cout << x;
  for(int i=0; i < number; ++i)
    cout << symbol;
  cout << endl;
}

int main()
{
  char letter = 'P';
  int integer= 47;
  double money= 39.25;
  string name = "Bob";
  showData(letter,5,'+');
  showData(integer,3,'*');
  showData(money,3,'0');
  showData(name,4,'a');
}
```

- Lab task 2 on the library is important for assignment three.

- For those of you that are interested, the template system of C++ is Turing-complete at compile time.
  - That means it's capable of computing anything that can be computed, at compile time.

Assignment Three

- You need to use CC with C++11, so

$ CC –std=c++11 …

- Careful with the modulus
  - What does % do in C++?

- 1 – 2 mod p → p-1.

A Mint test case …

The input parameters …

```
$ ./CFC 0 1 3 4 10
```

0 → Mint case
1 → seed value
3 → codeword length
4 → number of codewords
10 → modulus

The codebook

0 0 0	Weight: 0
4 9 7	Weight: 3
9 0 1	Weight: 2
3 9 1	Weight: 3

Minimum weight: 2

The distance matrix

0	10	10	17
20	0	20	7
10	10	0	7
13	13	13	0

Note the distance matrix order.
Row 1 is codebook Row 1 - …

Minimum distance: 7

A Melt test case …

The input parameters …

```
$ ./CFC 1 1 3 4
```

1 → Melt case
1 → seed value
3 → codeword length
4 → number of codewords
10 → modulus

The codebook

a a a	Weight: 0
k z s	Weight: 3
y a d	Weight: 2
h z d	Weight: 3

Minimum weight: 2

The distance matrix

0	3	2	3
3	0	3	2
2	3	0	2
3	2	2	0

Note the distance matrix order.
Row 1 is codebook Row 1 - …

Minimum distance: 2

A	0 0 0	Weight: 0
B	4 9 7	Weight: 3
C	9 0 1	Weight: 2
D	3 9 1	Weight: 3

A-A	A-B	A-C	A-D
B-A	B-B	B-C	B-D
C-A	C-B	C-C	C-D
D-A	D-B	D-C	D-D