

# CA3 Submission

## My Block

Block #90	
Transactions	
Yash Shah, 405-565-567	
Metadata	
Previous Hash	000c2866e2d1b4b2eeca7a4c74364d57
Timestamp	2023-06-16 17:54
Nonce	16fd
Hash	0006ea1fb3ab0a1fc5b7d86ffdaff2d25e8

## My Code

```
function SHA256 (input) {
  var digest = Utilities.computeDigest(Utilities.DigestAlgorithm.SHA_256, input);
  var output = "";
  for (i = 0; i < digest.length; i++) {
    var h = digest[i];
    if (h < 0) { h += 256; }
    if (h.toString(16).length == 1) { output += '0'; }
    output += h.toString(16);
  }
  return output;
}

function hashing_function(prev_hash, time, transactions, nonce) {
  var to_hash = prev_hash + time.toString() + transactions.toString() + nonce.toString();
  var hashed_output = SHA256(to_hash);
  return hashed_output;
}
```

```

function mine_a_block(p_hash, time, trans, diff) {
  var n = 0;
  var the_hash = hashing_function(p_hash, time, trans, n);

  //construct target string
  var temp_array = Array(diff + 1);
  var target_str = temp_array.join("0");

  //compare first few characters to target
  while (the_hash.substring(0, diff) !== target_str) {
    n++; //increment nonce
    the_hash = hashing_function(p_hash, time, trans, n);
  }

  //return object
  var obj_to_return = {};
  obj_to_return["nonce"] = n.toString(16);
  obj_to_return["hash"] = the_hash;

  return obj_to_return;
}

// written by chatgpt cuz this is a dumb formatting thing and i cannot be bothered by it haha
function get_timestamp() {
  var now = new Date();
  var year = now.getFullYear();
  var month = now.getMonth() + 1;
  var day = now.getDate();
  var hour = now.getHours();
  var minute = now.getMinutes();

  month = month < 10 ? '0' + month : month;
  day = day < 10 ? '0' + day : day;
  hour = hour < 10 ? '0' + hour : hour;
  minute = minute < 10 ? '0' + minute : minute;

  return year + '-' + month + '-' + day + ' ' + hour + ':' + minute;
}

function mine_nonce(prev_hash, timestamp, transactions) {
  var result = mine_a_block(prev_hash, timestamp, transactions, 3);
  return result.nonce;
}

function mine_hash(prev_hash, timestamp, transactions) {
  var result = mine_a_block(prev_hash, timestamp, transactions, 3);
  return result.hash;
}

date = get_timestamp()
console.log(date)
console.log(mine_nonce('000c2866e2d1b4b2eeca7a4c74364d57dedcdab6bdd576f8a7d1eaf21e30d44a', date, 'Yash Shah, 405-565-567'));
console.log(mine_hash('000c2866e2d1b4b2eeca7a4c74364d57dedcdab6bdd576f8a7d1eaf21e30d44a', date, 'Yash Shah, 405-565-567'));

```