

ECE 3140/CS 3420 Embedded Systems Homework 1

Q1. Explain what the following function `bsearch` below does. Then write Thumb assembly for it:

- Assuming array `a` begins at address `=a_addr`
- Using `LDR` with register offset, `LDR Rdest, [Rbase, Roffs]`

```
int bsearch(int i,int j,int v) {
    int h;

    if(i == j)
        return (a[i] == v) ? i : -1;
    h = (i+j)/2; /* use ASR */
    if(a[h] == v)
        return h;
    else if(a[h] > v)
        return bsearch(i,h,v)
    else
        return bsearch(h+1,j,v);
}
```