ESC101: Fundamentals of Computing (Minor Quiz 3)

29 March, 2016

Total Number of Pages: 2

Total Points 10

Question 1. (2 points) Consider the program given below.

```c
1  #include<stdio.h>
2
3  void f(char a){
4    if (a != 'Z'){
5      f(getchar());
6      putchar(a);
7    }
8  }
9
10 int main(){
11   f(getchar());
12   return 0;
13 }
```

What is the output of the program for the following inputs?

Input: XCYRVFIHGZ
Output:

GHIF VRYCX ✓

Input: YNMNMPPHZRVTYU
Output:

HPP MNMNY ✓

Question 2. (8 points) Consider the program given below.

```c
#include<stdio.h>

int f(int *ar, int n, int k){

  if (k==0) return 1;

  if (k<0 || n==0) return 0;

  return (f(ar+1,n-1,k) + f(ar+1,n-1,k-*ar));
}

int main(){
  int n,k,i;
  int ar[15];
  scanf("%d%d",&n,&k);
  for(i=0;i<n;i++){
    scanf("%d",ar+i);
  }
  printf("%d", f(ar,n,k));
  return 0;
}
```

Handwritten annotations near code:
$f(3,1,3) + f(3,1,$
(1,3,2)
1 2 3
0   2,2,2
(3,1,2) (3,1,0)
$f(3 \quad 6 \quad 2)$
$f(3 \quad 6 \quad 2)$ near line 9
7 4 (near lines 14)
2 3 1 5 8 2 9
7 4

What is the output of the program for the following inputs? If the program results in an error, mention the type of error.

Input: 7 4 2 3 1 5 8 2 9

Output:

```
0 2 ✓
```

Input: 9 5 1 2 2 3 2 4 9 5 6

Output:

```
0 8 ✓
```

Handwritten on right side:
12 2
2 3
2 3
3 2
5
2 2 1