HW #6

Pdf file only, with heading:
HW #6
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Due: 11:00 pm, Sunday Oct. 21, 2018 at Google Classroom because of the midterm exam

1. (20 pts) Rewrite the following program using macro definitions (#define) for all the constants and a new type definition (typedef) called Card for all the values representing the value of cards.

```
#include <stdio.h>
int main(void) {
    char selectedCard;
    printf("Choose a card\n");
    scanf("%c", &selectedCard);

    if (selectedCard == 'J' || selectedCard == 'Q' || selectedCard == 'K') {
        printf("You earn 10 points\n");
    } else if ((selectedCard >= '5' && selectedCard <= '9') ||
    selectedCard == 'T' ) {
    /* between 5 and 9 or equal to T for Ten */
        printf("You earn 2 pts\n");
    } else if (selectedCard == '1') {
        printf("You earn 20 pts\n");
    } else {
        printf("No cheating allowed. You earn 0 pts\n");
    }

    return 0;
}
```

```c
#include <stdio.h>
#define jack 'J'
#define queen 'Q'
#define king 'K'
#define ace '1'
#define five '5'
#define nine '9'
#define ten 'T'

int main(void) {

    typedef char Card;
    Card selectedCard;

    printf("Choose a card\n");
    scanf("%c", &selectedCard);

    if (selectedCard == jack || selectedCard == queen || selectedCard ==
king) {
        printf("Your earn 10 points\n");
    } else if ((selectedCard >= five && selectedCard <= nine)
            || selectedCard == ten) {
      printf("You earn 2 pts\n");
    } else if (selectedCard == ace) {
      printf("You earn 20 pts\n");
    } else {
      printf("No cheating allowed. You earn 0 pts\n");
    }

    return 0;
}
```

2. (15 pts) Declare a character array of size 5. Write a loop to initialize the array with consecutive letters starting at the letter 'M'

```
#include <stdio.h>

int main(void) {
   char chrarr[5];
   for (int l = 77; l < 82; l++) {
      printf("%c", l);
      chrarr[(l-77)] = l;
   }

}
```

3. (15 pts) Declare a two dimensional int array of size 3 x 10 (row x column) and initialize the first element of every row to 7 and the remaining elements to 0 at the same time of declaration.

```
#include <stdio.h>

int main(void) {
   int a[3][10] = {
      {7,0,0,0,0,0,0,0,0,0},
      {7,0,0,0,0,0,0,0,0,0},
      {7,0,0,0,0,0,0,0,0,0},
   };

   for (int j = 0; j < 3; j++) {
      for (int k = 0; k < 10; k++) {
         printf("%d ", a[j][k]);
      }
      printf("\n");
   }
}
```

4. (20 pts) Write a function that takes a character as input and returns it in uppercase. If the character is uppercase or not an alphabet letter, the function should return the same character without changing it.

```
#include <stdio.h>

char upper(char c) {
   if (c > 96 && c < 123) {
      c -= 32;
   }
   return c;
}

int main(void) {
   char letter;
   printf("Enter a character: ");
   scanf("%c", &letter);

   char uc = upper(letter);

   printf("%c", uc);

   return 0;
}
```

5. (15 pts) What is the output of the following program?

```
#include <stdio.h>
   int makeBigger(int number, int factor) {
      return number*factor;
   }
   int main(void) {
      int x = 2;
      printf("%d %d\n", makeBigger(x + 1, 5),
      makeBigger(makeBigger(x+2, 3), -3) );
      return 0;
   }
```

   15 -36

6. (15 pts) Fix four errors in the following program:

```
#include <stdio.h>
   int main(void) {
      char[7]a = {'a', 'b', 'c', 'd', 'e', 'f', 'g', 'h'};
      char b[7] = {'A'};
      char target = 'f';

      /* copy array a into array b: */
      b = a;
```

```c
    /* Look for target in array a: */
    for (x=0; x<=7; x++) {
       if (a[x] == target)
          printf("Found it\n");
          break;
    }
    return 0;
}

#include <stdio.h>
#include <string.h> // Used for memcpy

int main(void) {
   char a[7] = {'a', 'b', 'c', 'd', 'e', 'f', 'g'};
   char b[7] = {'A'};

   char target = 'f';

   // Copy array a into array b
   memcpy(b, a, sizeof(b));

   // Look for target in array
   for (int x = 0; x <= 7; x++) {
      if (a[x] == target) {
         printf("Found it\n");
         break;
      }
   }
   return 0;
}
```