

HW1 - STAT 580 - Sp 2015

Yet T Nguyen

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1.

Similar to slide set 1 p.28, write a C program that prints the correspondence table of Fahrenheit temperatures and their Celsius equivalents using $C = (5/9)(F - 32)$. Instead of specifying the step size, the program should allow the user to specify the number of rows (through a symbolic constant). For instance, if the number of rows is 11 with lower and upper limits set as 0 and 200, the rows of the table should correspond to 0F, 20F, 40F, 60F, 80F, 100F, 120F, 140F, 160F, 180F, 200F. Note that the program should allow any (reasonable) positive number of rows (and so the corresponding Fahrenheit temperatures may not be integer).

```
#include <stdio.h>
#define lower 0.0 /* this is a float variable */
#define upper 200.0
#define nrow 201 /* This can be changed*/
int main() {
    double f, c, step;
    step = (upper - lower)/nrow; //
    f = lower;
    printf("F\t C\n");
    while (f <= upper){
        c = 5*(f - 32)/9;
        printf("%.2f \t %.2f\n", f, c);
        f = f + step;
    }
    return 1;
}
```

2.

Similar to slide set 1 p.32, write a program that prints only the numeric input. Say, if the input is 'I am 1not2 n34umber', the program should print '1234'.

```
#include<stdio.h>
int main(){
    int c;
    c = getchar();
    while (c != EOF){
        if ((c>='0') && (c<= '9')) putchar(c);
        c = getchar();
    }
    return 0;
}
```

3.

* Similar to slide set 1 p.32, write a program that shifts the lower case English characters by 2 characters. That means: a to c, b to d, ..., x to z. Keep y and z unchanged. For instance, if the input is amppcar ABC 123z, the program should print correct ABC 123z.

```

#include<stdio.h>
int main(){
    int c;
    c = getchar();
    while(c!=EOF){
        if ((c>='97') && (c <= '120')) c = c + 2;
        putchar(c);
        c = getchar();
    }
    return 0;
}

```

4.

Similar to slide set 1 p.33, write a program that counts the number of words.

```

#include <stdio.h>
#define IN 1
#define OUT 0
int main(){
    int nw, c, state;
    nw = 0;
    state = OUT;
    c = getchar();
    while (c!= EOF){
        if (c == ' ' || c == '\t' || c == '\n') {
            state = OUT;
        }
        else if (state == OUT) {
            state = IN;
            nw = nw +1;
        }
        c = getchar();
    }
    printf("\nNumber of words :%d\n", nw);
    return 0;
}

```

5.

```

#include<stdio.h>
int main(){
    int i, j, c;
    double a, b;
    a = 1+2/5.0;
    printf ("%f\n",a); /*1.400000*/
    b = 1/2 + 3.0/4.0;
    printf ("%f\n",b); /*0.750000*/
    c = 3 < 10 && 2 * 8 < 2;
    printf("%d\n", c); /* 0 */
    i = 0;
    j = 2;
    j+=i++;
    printf("i = %d, j = %d\n", i, j); /* i = 1, j = 2*/
    return 0;
}

```