#include "stdio.h" void main(void) { En broppe char message[80] = "I love C programming"; int i=0, count=0; call furction while (message[i]!='\0'){ if ((message[i]=='C') | | (message[i]=='C')){ printf("\"%s\" contains %d c's\n", message, count); **Re-write** the above program so that all the code for determining the number of c's in the string message is contained in a function called c counter() that you should define, while the declaration and initialization of message and the output is still done from main (). [10 Marks] Staro.h" void Main (void) } Char massage [80] = "I hove C programming"; int C_counter (Char Str \$00); pintf ("1" 7051" contains lod c's n", message, C - counter (message)); C_counter (Char SE3) int i = 0 , count = 0 ; white (S[i]! = "10") & 'f ((S(i) == 'c')|| (\sti) == 'C')) } Page 8 of 9

Consider the following C program:

3,661 seconds is equivalent to 1 hour, 1 minute, and 1 second. Use the following function prototype:

void convert(int time, int *phrs, int *pmins, int *psecs);

Remember to use good programming standards, define the problem statement, show the design of the program, add comments to the code, and follow good formatting practices to lay out the code. Your answer should include the algorithm design and the code.

[20 Marks] 1. Problem Statement. Take in a integer (postive) number of seconds to Convert to hows, min & sec 2. Main prégram, initatise voviables, call logram, print out results

Number/3600 Hours

3. function de consession remainder *60 minutes ©UCD 2010/11/ Modular convert (in time, 9 nt * pho, fortyphions, int *psacs) {

* phrs = time / (60 × 60); time - = + phs *60 ×60 /* How much is lest*/ * prins = time / 60 time = = & pmins & 60; # include (Station) + psec = time; Void Main (void) & yord convert (in tin ----)!

Void Main (void) {

Void Convert (int time ---);

Int time, his, mins, secs;

Parint & ("Enter time to convert in seconds ");

Seconds ");

Seconds ");

Convert (" ?d", 2 time);

Convert (time, 2 his, 2 mins, 2 secs)

(b) Consider the following C program:

```
#include <stdio.h>
/* DEFINITION OF FUNCTION "zerofinder" GOES HERE */
void main(void) {
  int i, array2[8]={1,-1,-1,0,1,0,-1,1};
  i = zerofinder(array2,8);
  if (i == -1) printf("\nno zero value in array2\n");
else printf("\nfirst 0 element array2 has index %d\n", i);
}
```

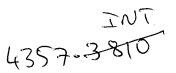
Write down the definition of function zerofinder () which returns the index of the first 0 value, or -1 if no 0 value is found, so that the output of the above program is:

first 0 element array2 has index 3

[15 Marks]

$$\frac{2erofnder}{j=0;}$$
 $\frac{1}{j=0;}$
 $\frac{1}{j=0;}$

Return - 1;



(j) What is the screen output of the following fragment of C code?

> float number = 435.73810, new; new = ((int) (10*number))/10.0; (35°70) printf("number is %7.2f\n", new);

> > number 15_435.70

(k) What is the screen output of the following fragment of C code?

```
inc 1, j=2;
for (i=6;i>2;i--){
    j+=i;
    printf("j is %d\n",j);
}
the screen output of the following fragment of C code?
    j is 20
```

(1) What is the screen output of the following fragment of C code?

> 9.426 double x=3.142; printf("value is %4.2f",3*x); Value is 9.43

(m) What is the screen output of the following fragment of C code?

```
l is 8
int i=10;
while (i>5) {
i -= 2;
i = i - 2
                                  i 156
  printf("i is %d\n",i);
}
```

What is the screen output of the following fragment of C code? (n)

```
#include <stdio.h>
                               pichs middle
  int f1(int a, int b, int c){
         return (b);
  int f2(int a, int b){
         int c = f1(a, b, 3); and I to second integer
         return c+1;
  void main()
         printf("result is %d\n", f1(-1,f2(2,4),2));
result is 5
```

What is the screen output of the following fragment of C code? (o)

X is -2 and y is -15 ©UCD 2011/12/ Modular

(r) What is the screen output of the following fragment of C code? The initial values in datafile.txt are:

```
0.2 80 16.0 Aug 58.0

0.7 60 417.0 Aug 58.0
```

```
float prob, avg=0.0;
int quantity, num_values=0;
FILE *fptr;
fptr=fopen("datafile.txt", "r");
while(fscanf(fptr, " %f %d", &prob, &quantity)==2){
/* if return value from this fscanf() is not 2, */
/* the end-of-file indicator has been reached */
avg = avg + (prob*quantity);
}
fclose(fptr);
printf("average value is %.2f\n", avg);
```

average value is 63-00

(s) What are the contents of datafile.txt after the execution of this fragment of code? The initial values in datafile.txt are:

200 -54

int var1, var2;

FILE *fp;

FILE *fptr;

fp=fopen("datafile.txt", "r");

fscanf(fp, "%d %d", &var1, &var2);

fclose(fp);

fptr=fopen("datafile.txt", "w");

fprintf(fptr, "%d\n%d", var2, var1);

fclose(fptr);

(t) What is the screen output of the following fragment of C code?

```
double x=3.14159;
printf("value is %.3e",x);
```

Value 15 3.142 et00