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Conceptual Question

1. The C programming language is flexible, versatile, and powerful. Also, there are many other programming languages based on C. It is easier to learn if you have the experience of. C is used in operating systems (Linux, Android, IOS), microcontrollers, and a wealth of other devices.

2. A compiler is a computer program (or perhaps a set of programs) that transforms source code written by a developer in to machine code.

3. A Makefile is similar to a compiler. It is a special file that contain shell commands to build code from source files. When user type "make" in shell/terminal, the commands in the makefile will be executed.

4. <math.h> This header file contains mathematical functions.
<string.h> This header file contains functions for string operations.
<time.h> This header file contains Date and Time functions.
<stdio.h> This header file contains Input and Output functions.
<locale.h> This header file contains localization functions.

5. <math.h>: sqrt(), This function calculates and returns the square root of the number argument passed.
<string.h>: strlen(), This function returns the length of the string argument passed.
<time.h>: difftime(), This function computes the difference between time arguments passed.
<stdio.h>: fread(), This function reads from the file argument passed.
<locale.h>: setlocale(), This functions sets or gets the current C locale.

Application Question

```
//q1
#include <stdlib.h>
#include <stdio.h>

int main (void)
{
int ar[10] = {1,2,3,4,5,6,7,8,9,10};
for (int i = 0; i< 10 ; i++)
     printf("%d\n", ar[i]);
}
```

```
//q2
#include <stdlib.h>
#include <stdio.h>

int main (void)
{
double ar[5] = {1.2,5.5,2.1,3.3,3.3};
for (int i = 1; i< 5 ; i++){
      if (ar[i] > ar[i-1])
            printf("%f greater than %f \n", ar[i], ar[i-1]);
      else if (ar[i] < ar[i-1])
            printf("%f less than %f \n", ar[i], ar[i-1]);
      else
            printf("%f is the same as %f \n", ar[i], ar[i-1]);
}
}

//q3
#include <stdlib.h>
#include <stdio.h>

int main(void)
{
      char str[] = "hello world";
      int char_num = 0;

      while (str[char_num] != '\0')
      {
            printf("%c", str[char_num++]);
      }

      printf("\n");
}

//q4
#include <stdlib.h>
#include <stdio.h>

int main(void)
{
     for (int i = 1; i <= 10; i++)
     {
          if ( i % 2 == 0)
          {
               printf ("even\n");
          }
          else
          {
               printf ("odd\n");
          }
     }
```

```
	return 0;
}
//q5
#include <stdlib.h>
#include <stdio.h>
#include <time.h>
#include <math.h>

double euclid_dist(int x_one, int x_two, int y_one, int y_two)
{
	return sqrt(pow((x_two - x_one), 2) + pow((y_two - y_one),
2));
}

int main(void)
{
	srand(time(0));

	for (int i = 0; i < 10; i++)
	{
		int x1 = rand() % 100;
		int x2 = rand() % 100;
		int y1 = rand() % 100;
		int y2 = rand() % 100;

		double distance = euclid_dist(x1, x2, y1, y2);
		printf("(%d) x1: %d, y1: %d, x2: %d, y2: %d, Euclidean
Distance: %f\n", i+1, x1, y1, x2, y2, distance);
	}

	return 0;
}
```