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Computer Systems

Assignment 5

The first code, named "SmallPosInt," is a simple program in C that aims to find the smallest positive integer, i, such that **i** is not equal to j , where j is derived from casting i as a float and then back to an integer. The program uses a while loop to iterate through integers until it finds the smallest i that meets the condition. This code can be run by saving it in a file named "SmallPosInt.c" and compiling it using a C compiler such as GCC. The compiled executable can then be executed from the command line or terminal.

The second code, named "MaxMinOverFlow," is another C program that demonstrates the maximum and minimum values of various data types such as integers, long integers, floats, characters, and doubles. Additionally, it showcases overflow scenarios for each data type by attempting to exceed their maximum values. To run this code, save it in a file named "MaxMinOverFlow.c," compile it using a C compiler like GCC, and then execute the compiled executable from the command line or terminal.

Code1: (SmallPosInt.c)

#include <stdio.h>

int main()

{

int i = 0;

int j = (int)(float)i;

while (i == j) {

i++;

j = (int)(float)i;

}

printf("i=%d\nj=%d\n", i, j);

return 0;

}  
  
  
Code 2 : (MaxMinOverFlow.c)

#include <stdio.h>

#include <limits.h>

#include <float.h>

int main()

{

printf("Integers: \n");

printf("Max value of int: %d\n", INT\_MAX);

printf("Min value of int: %d\n", INT\_MIN);

printf("\n");

printf("long: \n");

printf("Max value of long: %ld\n", LONG\_MAX);

printf("Min value of long: %ld\n", LONG\_MIN);

printf("\n");

printf("float: \n");

printf("Max value of float: %e\n", FLT\_MAX);

printf("Min value of float: %e\n", FLT\_MIN);

printf("\n");

printf("char: \n");

printf("Max value of char: %d\n", CHAR\_MAX);

printf("Min value of char: %d\n", CHAR\_MIN);

printf("\n");

printf("double: \n");

printf("Max value of double: %e\n", DBL\_MAX);

printf("Min value of double: %e\n", DBL\_MIN);

printf("\n");

printf("Overflow demonstration: \n");

printf("\n");

printf("Overflow of int: %d\n", INT\_MAX + 1);

printf("\n");

printf("Overflow of long: %ld\n", LONG\_MAX + 1);

printf("\n");

printf("Overflow of float: %e\n", FLT\_MAX \* 10);

printf("\n");

printf("Overflow of char: %d\n", CHAR\_MAX + 1);

printf("\n");

printf("Overflow of double: %e\n", DBL\_MAX \* 10);

printf("\n");

return 0;

}