**B.E / B. Tech. Degree Examination, April/May 2015**

**GE6151 – Computer Programming**

**(Common to all branches)**

**(Regulation 2013)**

**Time : Three hours Maximum : 100 Marks**

**PART A (10x2=20 marks)**

**1. What is super computer? Give an example.**

Super Computers are the special purpose machines, which are specially designed to maximize the number of floating point operations per second (FLOPS). A Super computer has the highest processing speed at a given time for solving scientific and engineering problems.

**2. Define pseudo code.**

Pseudo code is made up of two words: Pseudo and code. It means imitation and code refers to instructions, written in a programming language. Pseudo code is an outline of a program. It uses plain English statements rather than symbols. It is also known as PDL (Program Design Language).

**3. What is the importance of Keywords in C?**

Keywords are reserved words, that have standard and predefined meaning in C language. They are the basic building blocks for program statements. Some of the keywords are:

int, break, continue, for, float, char etc.

**4.List the various input and output statements in C**.

Input statement : scanf()

Output Statetment : printf()

**5. What is an array?Give an example.**

An array is a derived data type. It is a collection of data elements of similar data type under a common name. Each element in the collection is indentified by an index.

Example;:int a [ ] = {1,2,3,4};

**6. How is a character string declared?**

char name [ ] ={” st.”, “josephs”,”institute”};

**7. Compare actual parameters and formal parameters.**

**Actual arguments:**

The arguments that are passed in a function call are called actual arguments. These arguments are defined in the calling function.

**Formal arguments:**

The formal arguments are the parameters/arguments in a function declaration. The scope of formal arguments is local to the function definition in which they are used.

A change in formal arguments would not be reflected in the actual arguments.

**8.What is the output of the following program?**

main( )

{

int a=8, b=4, c, \*p1=&a, \*p2=&b;

C=\*p1\*\*p2-\*p1/\*p2+9;

Printf(“%d”,c);

}

**Output: compilation error**

**9. What do you mean by structures?**

A Structure is a collection of one or more variables of different data types, grouped together under a single name. By using structures, we can make a group of variables, arrays, pointers etc.

**10. Give the use of preprocessor.**

Before a C program is compiled in a compiler, source code is processed by a program called preprocessor. This process is called preprocessing.

Commands used in preprocessor are called preprocessor directives and they begin with “#” symbol.

**PART B-(5 x 16 = 80 marks)**

11. (a) (i) Describe various generations of computers. (10) **Refer 1.5**

(ii) Convert the decimal number 681.75 into binary,octal and hexadecimal equivalent.(6)

BINARY:

2 681 decimals:

2 340 1 0.75 x 2 =1.50

2 170 0 0.50 x 2 = 1.00

2 85 0

2 42 1

2 21 0

2 10 1

2 5 0

2 2 1

1 0

(1010101001.11)2

OCTAL:

8 681

8 85 1 decimal: 0.75 X 8 = 6.00

8 10 5

1 2 (1251.6)8

HEXADECIMAL:

16 681 decimal: 0.75 X 16 = 12.00 12=C

16 42 9

16 2 10 (A) ( 2 A 9. C)16

(or)

(b) (i) Explain the basic organization of a computer with neat diagram. (10) **Refer 2.1**

(ii) Draw a flowchart to check whether the given number is zero, positive or negative. (6)

Read n

Is n>0?

T

Print “n is positive”

F

Is n<0?

Print “n is negative”

Print “n is zero”

T

F

12 (a) (i) Explain the difference types of operators available in C. (8) **Refer 8.1 to 8.9**

(ii) What are constants? Explain the various types of constants in C. (8) **Refer 7.6**

(or)

(b) (i) Describe the various looping statements used in C with suitable examples. (8)

**Chapter 11**

(ii) Write a C program to solve the quadratic equation. (8)

#include<stdio.h>

#include<conio.h>

#include<math.h>

void main()

{

float a, b, c, d, root1, root2;

clrscr();

printf("Enter the values of a, b, c\n");

scanf("%f%f%f", &a, &b, &c);

if(a == 0 || b == 0 || c == 0)

{

printf("Roots can't be determined");

}

else

{

d = (b \* b) - (4.0 \* a \* c);

if(d > 0.00)

{

printf("Roots are real and distinct \n");

root1 = -b + sqrt(d) / (2.0 \* a);

root2 = -b - sqrt(d) / (2.0 \* a);

printf("Root1 = %f \nRoot2 = %f", root1, root2);

}

else if (d < 0.00)

{

printf("Roots are imaginary");

root1 = -b / (2.0 \* a) ;

root2 = sqrt(abs(d)) / (2.0 \* a);

printf("Root1 = %f +i %f\n", root1, root2);

printf("Root2 = %f -i %f\n", root1, root2);

}

else if (d == 0.00)

{

printf("Roots are real and equal\n");

root1 = -b / (2.0 \* a);

root2 = root1;

printf("Root1 = %f\n", root1);

printf("Root2 = %f\n", root2);

}

}

getch();

}

13.(a) (i) Write a C program to add two matrices. (10) **Refer 12.9.1**

(ii) Write a c program to search a given number in an array of elements.(6) **Refer 12.5.3**

(or)

(b) (i) Write a c program in arrange the given 10 numbers in ascending order. (10)

**Refer 12.5.2**

(ii) Explain the various strings handling function. (6) **Refer 13.6**

14.(a) (i) Write a C program to find the factorial of a given number using function. (8) **Appendix - I. 7**

(ii) Write a C program to exchange the values of two variables using pass by reference. (8) **Refer 14.7**

(or)

(b) (i) Write a C program to find the sum of the digits using recursive function.(8)

#include<stdio.h>

void main(){

int num,x;

clrscr();

printf("\nEnter a number: ");

scanf("%d",&num);

x=sum(num);

printf("Sum of the digits of %d is: %d",num,x);

}

int r,s;

int sum(int n)

{

if(n){

r=n%10;

s=s+r;

sum(n/10);

}

else

return s;

}

(ii) Write a C program using pointers to read in an array of integers and print its element in reverse order. (8)

#include<stdio.h>

#include<conio.h>

#define MAX 30

void main() {

   int size, i, arr[MAX];

   int \*ptr;

   clrscr();

   ptr = &arr[0];

   printf("\nEnter the size of array : ");

   scanf("%d", &size);

   printf("\nEnter %d integers into array: ", size);

   for (i = 0; i < size; i++) {

      scanf("%d", ptr);

      ptr++;

   }

   ptr = &arr[size - 1];

   printf("\nElements of array in reverse order are :");

   for (i = size - 1; i >= 0; i--) {

      printf("\nElement%d is %d : ", i, \*ptr);

      ptr--;

   }

   getch();

}

15. (a) Define a structure called book with book name ,author name and price . Write a C program to read the details of the book name ,author name and price of 200 books in a library and display the total cost of the books and the boom details whose price is above Rs. 500. (16)

#include<stdio.h>  
#include<conio.h>  
#include<stdlib.h>  
#include<string.h>  
void book\_auth();  
void book\_pub();  
void book\_price();  
void disp\_book();  
void add\_book();  
  
struct book  
{  
char title[20];  
int  acc\_no;  
char author[20];  
char pub[20];  
int price;  
};  
int count;  
struct book b[100];  
  
void main()  
{  
int ch;  
while(1)  
{  
clrscr();  
printf("\n 1:add book \n");  
printf("\n 2:specific author \n");  
printf("\n 3:specific publisher \n");  
printf("\n 4:price above 500 \n");  
printf("\n 5:all book \n");  
printf("\n 6:exit \n");  
printf("\n\n enter the choice \n");  
scanf("%d",&ch);  
switch(ch)  
{  
case 1: add\_book(); getch();  
break;  
case 2: book\_auth(); getch();  
break;  
case 3: book\_pub(); getch();  
break;  
case 4: book\_price(); getch();  
break;  
case 5: disp\_book(); getch();  
break;  
case 6:exit(0);  
}  
}  
}  
void add\_book()  
{  
if(count==9)  
{  
printf("\n no more space");  
return;  
}  
printf("\n enter book detail ");  
 printf("\n enter accession number of book \n");  
scanf("%d",&b[count].acc\_no);  
printf("\n enter name of book\n");  
scanf("%s",b[count].title);  
printf("\n enter name of author\n");  
scanf("%s",b[count].author);  
printf("\n enter the publisher\n");  
scanf("%s",b[count].pub);  
printf("\n enter book price \n");  
scanf("%d",&b[count].price);  
count++;  
}  
void disp\_book()  
{  
int i;  
printf("\n detail of %d book ",count);  
for(i=0;i<count;i++)  
{  
printf("\n %d\n%s\n%s\n%s\n%d",b[i].acc\_no,b[i].title,b[i].author,b[i].pub,b[i].price);  
}  
}  
  
void book\_auth()  
{  
int i,cnt;  
char name[20];  
printf("\n enter the name of author");  
scanf("%s",name);  
for(i=0;i<count;i++)  
{  
if(strcmp(name,b[i].author)==0)  
{  
cnt++;  
printf("\n%d\n%s\n%s\n%s\n%d",b[i].acc\_no,b[i].title,b[i].author,b[i].pub,b[i].price);  
}  
if(cnt==0)  
printf("\n no such book");  
}  
}  
void book\_pub()  
{  
int i,cnt;  
char name[20];  
printf("\n enter the name of publisher=");  
scanf("%s",name);  
for(i=0;i<count;i++)  
{  
if(strcmp(name,b[i].pub)==0)  
{  
cnt++;  
printf("\n%d\n%s\n%s\n%s\n%d",b[i].acc\_no,b[i].title,b[i].author,b[i].pub,b[i].price);  
}  
}  
if(cnt==0)  
printf("\n no such book");  
}  
  
  
  
void book\_price()  
{  
int i;  
for(i=0;i<count;i++)  
{  
if(b[i].price>500)  
{  
printf("\n%s",b[i].title);  
}  
}  
}

(or)

(b) (i) Explain the various storage classes in C. (10) **Refer 17.1**

(ii) What is union? Discuss with an example. (6) **Refer 16.7**