DigiPen INSTITUTE OF TECHNOLOGY SINGAPORE

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Instructions

This quiz is graded against **100 points total** with exactly 100 points allotted to the questions. You are to **write legibly and show all workings** to derive your answers. Write in the given answer spaces below each question. Do assist by **marking "//" at your final answer** of each question to assist with grading. You may assume that all necessary includes are present for all questions.

Write the expected output in the answer box that follow. [30 marks] 0 1 2 3

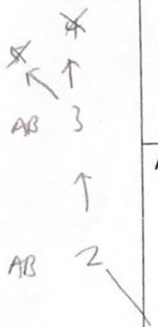
```
FuncR(0);
```

return;

ABABAABBAABABB

6 6 6 6 6

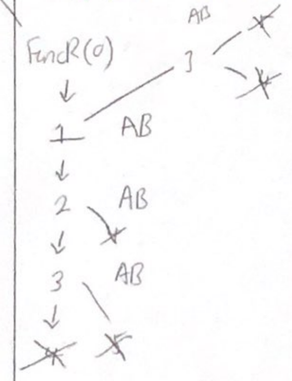
```
void FuncR(int i)
{           0 1 2 3
      if (i > 3)
          return;
             0 1 2 3
      FuncR(i+1);
      printf("A");
      FuncR(i+2);
      printf("B");
}
```



Answer:

FuncR (0+1); = FuncR (1);

X FuncR (0+2); = FuncR (2)



```
void FuncR (int 1)      void FuncR ( int 2)     void FuncR (int 3)
{                       {                       {
 FuncR (1+1);            FuncR (2+1);            FuncR (3+1) ;
}                       }                       }

void FuncR (int 4)
{
 return;
}
printf ("A");

void FuncR (int 2)      void FuncR (int 3)      void FunR (int 4)
{                       {                       {
 FuncR (2+1);            FuR (3+1);              return;
}                       }                       }
```

X

-30

-30

Write a function named StringToUpper that takes in a char pointer and returns void. The function will convert all lower-case characters in the given string to upper-case characters. [30 marks]

Answer:

```
  void  StringToUpper (char * string)
{
 int convertToUpper = 36;  -1
  while (*string)
  {                                   -1   -1
   if ('a < *string && *string <= z')
   {                  -1
  *string = *string  + (char)(convertToUpper) ;

   }
    String ++ ;
    ~~return 0;~~
 }        -1
}
```

X Missing NULL check

-5

Given a struct named "IntNode" that contain members "value" (integer) & "next" (struct IntNode*) which is used in a linked-list. Write a function named AddIntToListBack that takes in a pointer to an IntNode pointer and a new value integer. The function will create and insert a new node with the new value to the end of the linked-list. [40 marks]

Answer:

```
void AddIntToListBack { struct IntNode ** ptr , value }

 {
  struct IntNode * current = NULL ;
  struct IntNode * newNode = NULL ;


  if (ptr == NULL)
  return ;

  newNode = (struct IntNode *) malloc (sizeof (struct IntNode));
  newNode->value = value ;
  newNode->next = NULL ;
                                   -1
  current = *ptr
  if (current == NULL) {
 *ptr = newNode;  return ;  }
          -1
  while ( current -> next)
  {
   current = current -> next ;
  }
  current -> next = newNode ;

 }
```

-12