W5\_Qn1

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Unit Code: COS10007

Unit Name: Developing Techinical Software

Student ID: 103488515

Name: Hai Nam Ngo

Date Created: 3/28/2023

Date Modified: 3/28/2023

Problem: Week 5 Question 1

Problem Description: insert ten letters in the alphabet from A and then reverse and print out both

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#include <stdio.h>

#include <stdlib.h>

struct node

{

char a;

struct node \*next;

};

typedef struct node Node;

typedef Node \*nodePtr;

void printList(nodePtr currentPtr)

{

while(currentPtr!=NULL)

{

printf("%c -> ",currentPtr->a);

currentPtr=currentPtr->next;

}

printf("NULL");

}

nodePtr reverseList(nodePtr currentPtr)

{

nodePtr previousPtr=NULL, nextPtr;

while(currentPtr!=NULL)

{

nextPtr=currentPtr->next;

currentPtr->next=previousPtr;

previousPtr=currentPtr;

currentPtr=nextPtr;

}

return previousPtr;

}

int main()

{

nodePtr startPtr=NULL, newPtr, currentPtr;

char x='A';

for(int i=0;i<10;i++)

{

newPtr=malloc(sizeof(Node));

newPtr->a=x;

newPtr->next=NULL;

if(startPtr==NULL)

{

startPtr=newPtr;

currentPtr=newPtr;

}

else

{

currentPtr->next=newPtr;

currentPtr=newPtr;

}

x++;

}

currentPtr=startPtr;

printf("The list is \n");

printList(currentPtr);

currentPtr=reverseList(currentPtr);

printf("\n\nThe list in after reversing the node \n");

printList(currentPtr);

}

OUTPUT FOR W5\_Qn1

Text

Description automatically generated

W5\_Qn2

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Unit Name: Developing Techinical Software

Student ID: 103488515

Name: Hai Nam Ngo

Date Created: 3/28/2023

Date Modified: 3/28/2023

Problem: Week 5 Question 2

Problem Description:

Write a function printlistBackward that recursively outputs the items in a list in reverse order.

(Recursively Print a List Backward)

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#include <stdio.h>

#include <stdlib.h>

struct node

{

int a;

struct node \*next;

};

typedef struct node Node;

typedef Node \*nodePtr;

void printList(nodePtr currentPtr)

{

while(currentPtr!=NULL)

{

printf("%d -> ",currentPtr->a);

currentPtr=currentPtr->next;

}

printf("NULL");

}

void printListBackward(nodePtr currentPtr)

{

if(currentPtr==NULL)

return;

printListBackward(currentPtr->next);

printf("%d -> ",currentPtr->a);

}

int main()

{

nodePtr startPtr=NULL, newPtr, currentPtr;

for(int i=0;i<10;i++)

{

newPtr=malloc(sizeof(Node));

newPtr->a=i;

newPtr->next=NULL;

if(startPtr==NULL)

{

startPtr=newPtr;

currentPtr=newPtr;

}

else

{

currentPtr->next=newPtr;

currentPtr=newPtr;

}

}

currentPtr=startPtr;

printf("The list is \n");

printList(currentPtr);

printf("\nThe list in reverse order is \n");

printListBackward(currentPtr);

printf("NULL");

}

OUTPUT FOR W5\_Qn2

