



OTTAWA

PC NEWS

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ARTICLE

Exploring Android's File System – Part 4 by Alan German

Having some knowledge of how Android's file system is structured and functions provides us with the basis for optimizing our use of the available storage. We know that, as a non-root user, our options for viewing and managing the storage areas on our Android device are somewhat limited. Nevertheless, there are a number of items that we can tweak to best effect.

One major way to create space is to supplement the device's internal storage with an installed micro-SD card and use this as secondary (external) storage. By default, the SD card is used as "portable" storage and effectively shows as a second drive. Usually, it is also possible to setup the SD card as "adopted" storage in which case it essentially becomes an integral part of the device's internal storage. However, this limits the flexibility of using the SD card and so my preference is to retain the card as external storage.

But, the bottom line is that, whichever storage mechanism is selected, the available storage for a device can be considerably increased by the addition of a micro-SD card. For example, my Motorola G3 smartphone nominally has 8 GB of storage but, due to the space taken by the operating system, the pre-installed apps, various multiple apps that I installed, and all the associated data files, there was frequently less than 500 GB of free space. Clearly, the situation can be vastly improved by installing a supplementary 32 GB (or larger) SD card.

However, utilizing such new found space is not necessarily straightforward. Pre-installed apps typically re-

side permanently in internal memory and can't be removed. And, even some consumer apps can't be installed or have their data stored automatically on the external storage.

Now, while pre-installed apps can't be deleted from the system, they can be "disabled". This process (*Settings > Apps and notifications > {Specific App} > Disable > Disable app*) results in major reductions in the storage space used by the app. In addition, disabled apps are not updated, potentially resulting in further space savings, and definitely saving the time to download and install such updates. The smaller amount of storage that is still used by a disabled app leaves it a "suspended" state. The process can be readily reversed and the app re-enabled so that re-installation of the app is not required.

With regard to user-installed apps taking up internal storage space, one possible solution is to identify an app that includes all of the necessary features required by the user but which does allow installation in external storage. Similarly, one of the required features might be that data files used by the app are stored on the SD card. For example, an alternative camera app might offer similar features to the default app, yet allow the storage location for photographs to be selected as either internal or external storage. If such an app cannot be identified, another strategy is to manually move sets of digital photographs from the internal to the external storage using a file manager, thus creating free space in internal storage on an on-going basis.

One feature of apps that can take up considerable space that is basically a convenience rather than a necessity is the data caching process. A good example of this is a web browser. The cache may well contain data related to web pages that have been loaded previously and the browser may use such data to avoid the time taken to request the same page from the relevant web server. Nevertheless, if the cache is cleared, so restoring free space, the data will be requested, downloaded, and displayed on an on-demand basis.

On many older Android systems (Android 8 [Oreo] and earlier) it is possible to clear the cache for all installed apps in a single operation using: *Settings > Storage > Internal shared storage > Cached data > Clear cached data*. On newer devices clearing the cache is done on the basis of individual apps as: *Settings > Apps and notifications > {Specific App} > Storage & cache > Clear cache*. Since this latter

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Next Meeting: **WEDNESDAY, February 9th, 2022**

Next Meeting

Wednesday, February 9th, 2022

We will open the meeting with the AGM (10 – 15 minutes) and follow with the presentation.

Topic: [Getting Started in Genealogical Research](#)

Speakers: Heather Oakley and Mike More, Ottawa branch of the [Ontario Genealogical Society](#).

Mike Moore says, “I don’t know how many times I have heard somebody say ‘I wish I’d known that when I started my genealogy’”. For that reason, he and Heather Oakley developed the presentation being given on February 9th, 2022. There is no RIGHT way to do genealogy but there are better ways and one can learn from those who have gone ahead. This presentation is based on a course that was developed by the Ontario Genealogical Society, as part of its mandate. [\[more...\]](#)

Due to COVID-19 restrictions, this meeting will be via Zoom video conference.

Join us at <https://tinyurl.com/opcug-meeting>. The Zoom link will be live at 7:15 pm. The meeting will begin at 7:30 pm.

The above link includes the meeting ID and password. However, if you are prompted for the information, use:

Meeting ID: **924 9556 0898**

Password: **opcug**

Instructions for using Zoom are provided here:

<https://opcug.ca/wp-content/uploads/Zoom-instructionsv3.pdf>

Until further notice, Q&A sessions are no longer held after regular monthly meetings. Hence, monthly meetings now end 1 hour earlier at 9 pm. Everyone is welcome to join us on all other Wednesdays for **weekly Q&A sessions**.

All scheduled [regular monthly meetings](#), [weekly Q&A sessions](#), and a link to [OPCUG presentations at the OPL](#) are posted on our website at <https://opcug.ca/#upcoming>. All events are via video conference until further notice.



Coming Up...

March 9

Topic: Microsoft Teams

Speaker: Lawrence Patterson, OPCUG

(details to follow)

April 13

Topic: Office Smackdown

Speakers: Alan German and Chris Taylor, OPCUG

Are there any significant limitations in using LibreOffice instead of Microsoft Office? In this presentation, we will review the features of the major modules of both packages. [\[more...\]](#)

2022 CALENDAR

Meetings	Date	Time and Venue
Regular Monthly Meeting	Wednesday, February 9 th	7:30 pm via Zoom video conference: https://tinyurl.com/opcug-meeting To see all scheduled events, visit https://opcug.ca/#upcoming
Next Q&A Session	Wednesday, January 26th	Until further notice, Q&A sessions are no longer held after regular monthly meetings. Join us on all other Wednesdays for weekly Q&A .
Beer BOF (Wing SIG East)	Wednesday, February 9 th	Enjoy a cold brew or other beverage in the comfort of your home during the video conference.

SECRETARY'S REPORT FOR 2021/2022

Board Members

The Board of Directors for 2021/2022 was announced on March 15, 2021 at the Annual General Meeting. The Board selected positions at their next meeting resulting in the following slate of officers:

Chris Taylor, President and Systems Administrator
 Jocelyn Doire, Special Events
 Gail Eagen, Secretary
 Alan German, Treasurer
 Wayne Houston, Privacy
 Brigitte Lord, Webmaster and Newsletter
 Lawrence Patterson, Program and Publicity
 Bob Walker, Facilities
 Karen Wallace-Graner, Board Member without Portfolio

Board Meetings

The Board met 12 times on Mar 15, April 19, May 17, Jun 14, Aug 16, Sep 13, Oct 18, Nov 15 and Dec 13 in 2021 and Jan 17 in 2022.

Most of the discussion at meetings related to creating the program for the meetings, ensuring articles for the newsletter and monitoring the COVID situation in relation to resuming in-person meetings. With the pandemic still making meeting in-person impossible, the Board continued online video-conferencing Board and Monthly meetings using Zoom. Weekly Question and Answer sessions were continued through Zoom, and several online presentations were made for the Ottawa Public Library Tech Café series.

Major discussions and decisions made:

- To accept Richard Aylesworth's comments and recommendations on the review of the Treasurer's financial records for 2020
- To carry out a Membership survey (prepared and analyzed by Lynda Buske)

- To accept Lynda Buske's offer to help design/edit all OPCUG polls
- To discontinue the Q&A session on Monthly meetings
- To continue publicity through Facebook and Twitter and a press release to targeted outlets
- To encourage members to give presentations at monthly meetings by first offering a 2 TB drive for a September speaker and an honorarium to member speakers who were not Board members
- To give an honorarium to each outside presenter when there were multiple outside speakers for a Monthly meeting
- To improve the backup strategy for the website and Google drive
- To add Jocelyn Doire and Gail Eagen as signing authorities on the TD Bank account as well as Alan German and Chris Taylor
- To reinvest \$12,000 in a GIC at Tangerine for six months
- To move to paperless financial records
- To ask Richard Aylesworth to review the Treasurer's financial records for 2021
- To provide complimentary memberships for current members for one year from their expiry date starting in March 2021 and again in March 2022.

2021 Election

Bob Herres agreed to be Election Chair. Calls for nominations were done in the newsletter and at meetings through the fall. Nine nominations were received by the due date of December 31, 2021. Since there were only nine nominations, Board members were acclaimed and no election was required.

*Submitted by
 Gail Eagen,
 Secretary, OPCUG*



Two-year Membership for the Price of One (but only for a limited time)

Are you thinking of joining OPCUG? Right now, we have a very special membership offer. If you pay the annual \$20.00 membership fee before March 31, 2022 we will give you an additional year of membership absolutely free.* That's right - buy one year of membership in our club and get two years of membership at no extra charge. So, take action now. Join OPCUG today and obtain all the benefits of membership for a full two years!

** Note to current members – Do not renew your membership until you receive a renewal notice. This special offer also applies to you in that we will extend the expiry date of your current membership by a full year without you having to pay the annual fee.*

TREASURER'S REPORT - 2021

By Alan German

As indicated in the balance sheet shown below, while the club had a deficit of \$287.35 in fiscal year 2021, we retained total capital assets of \$17,521.93, placing us in a sound financial situation going forward.

ASSETS		
Current Assets		
1000	Cash	872.13
1100	Investment Account (Tangerine)	16,449.84
1200	Membership Float	40.00
1210	Petty Cash Float	7.00
1300	PayPal Account	152.96
	Total Assets	17,521.93
LIABILITIES AND OWNER EQUITY		
Owner Equity		
	OPCUG, Capital	
	December 31, 2020	17,809.28
	Total revenue	695.27
	Total expense	982.62
	Net income	-287.35
	OPCUG, Capital	
	December 31, 2021	17,521.93

Revenue		
2100	Bank Interest (Tangerine)	95.27
2200	Membership Income	600.00
2400	Merchandise Income	0.00
2500	Workshop Income	0.00
2900	Miscellaneous Income	0.00
2910	Donation Income	0.00
2920	Coffee Income	0.00
	Total revenue	695.27
Expenses		
3100	Internet Expense	433.91
3200	Newsletter Expense	0.00
3300	Office Supplies Expense	5.80
3400	Bank Charges (TDCT)	59.40
3500	Barbecue Expense	0.00
3600	Meeting Expense	413.11
3700	Workshop Expense	0.00
3800	Merchandise Expense	0.00
3900	Miscellaneous Expense	50.00
3910	Donation Expense	0.00
3920	Membership Expense	20.40
3940	Door Prize Expense	0.00
3950	Coffee Expense	0.00
	Total expenses	982.62
	Net income	-287.35

Balance Sheet and Income Statement for 2021

The year was once again dominated by the consequences of the Covid-19 pandemic which prevented us from holding any in-person meetings. This meant that we had no expenses for the facility rental with the church during the current fiscal year. Instead, we renewed our Zoom account to facilitate our meetings over video conferences, including both the regular monthly meetings and the weekly Q&A sessions.

With lower expenses than we have experienced in past years, the Board of Directors opted to continue the suspension of membership fees for existing members as of March 31, 2021. This provided an opportunity to make a special offer for new members joining the club before the March 31st deadline, where their payment of a single year's fees effectively provided a two-year membership. This "two-for-one" membership offer proved popular, especially for participants of our on-line Q&A sessions, and resulted in both an inflow of funds and an increase in club membership.

The Board of Directors also resolved to increase the honoraria for both external speakers and club members, who are not Board members, who give presentations at our monthly meetings to \$100.00.

The major expenses during the year were related to our on-line presence, namely the Zoom account, domain registration and web-hosting fees, and the provision of speaker honoraria. The fact that expenses exceeded income during the year, resulting in a relatively small deficit, was anticipated by the Board in making their financial decisions. The deficit is in accord with the club's financial plan that is aimed at reducing the accumulated assets over a number of years in a manner that provides benefits to club members.

Review of the OPCUG Financial Records for the year 2021

I reviewed The OPCUG Treasurer's books for 2021. They were, as usual, in good order. I found only a few administrative notations that needed straightening out.

I submitted my Review to the Treasurer and he reports that the necessary changes have been made.

Richard Aylesworth
January 23, 2022

The Board of Directors would like to thank Richard for his thorough review of the club's accounts.

ARTICLE

Zoom – Stop Changing My Window Size!

by Tristan Wrubleski

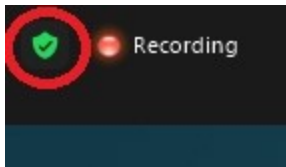
Problem:

By default the Zoom interface will switch your view into Full Screen, each time there is a screen share. During our remote meetings this will occur every time there is a transition between presenters, which can be inconvenient.

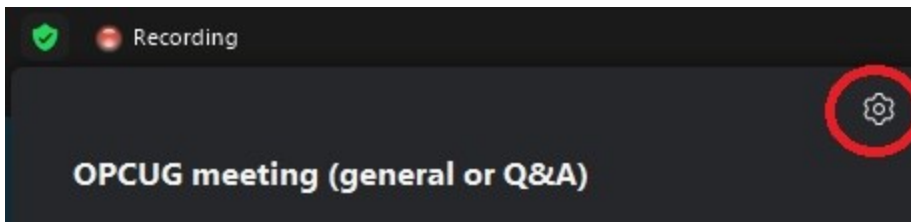
Solution:

Zoom does have a setting to prevent screen view changes, though it is a little bit non-intuitive to find.

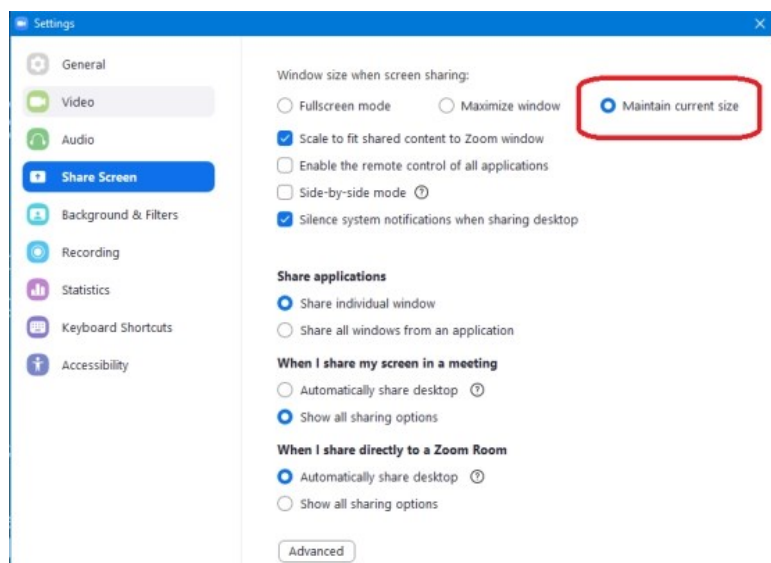
1. First find the green shield icon. In full screen view, it will be in the top-left corner. When not in full screen, it can normally be found on the left side under the bar showing the meeting participants.



2. Left-click on the green shield icon, to display the meeting information panel.
3. On the meeting information panel, you will find a gear icon in the top-right. Left-click the gear icon to open the Settings panel.



4. In the settings panel, you will find a setting for **Window size when screen sharing**. Set the option to **Maintain current size**.
5. You may now exit the Settings panel, by clicking on the X in the top-right corner.
6. Adjust the Zoom View to your preferred mode. Now when a screen share is started, your view should no longer automatically change to full screen.



THROUGH THE LENS

A guide to digital photography for computer enthusiasts. After the click of your camera, you're only half done!

Selective lighting adjustments in photo editing software

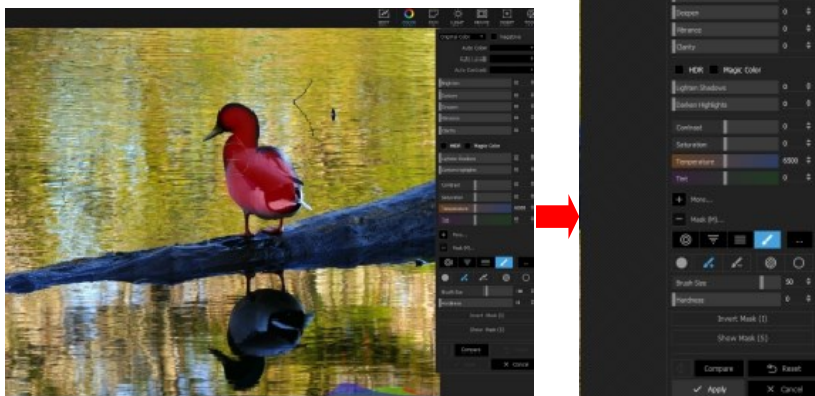
by Lynda Buske

Much of the free photo editing packages available either through Windows 10 (Windows Photos) or on sites like Google photos tend to have lighting tools that apply to the whole photograph and do not allow for adjustments to a particular area of a photo.

Typically, when you take a photo, your camera will set the appropriate exposure based on the entire field of vision so doesn't necessarily know that you are most interested in the small area that contains a face, bird or animal. This can be frustrating and an overall lighting adjustment may well cause the background to look washed out.

To remedy this situation, I use the free photo editing software, Photoscape X, to isolate a certain area. You simply click on the *Colour* tab, *Mask*, choose a brush size and "paint" the area (click and drag) that want to change.

In the example below, it is the bird I would like to lighten without washing out the background water. The red area is where I have painted the mask with my mouse.



As you can see from the example below, you don't have to be overly particular with the neatness of the mask. I usually keep a little bit away from the edge and it still works out fine. If you really have sharp eyes, you will have noticed that I removed a couple of twigs from the water too! For this, I used the spot healing brush in the *Tools* menu.

Lynda regularly gives presentations for the OPCUG at the **Ottawa Public Library** (<https://opcug.ca/opl-presentations/>). This article is also in PDF format on the OPCUG website (<https://opcug.ca/digital-photography/>).

Before:



After:



For many lighting adjustments you may find you have greater capabilities if you are using an image shot in RAW format rather than JPG. Photoscape X will handle both formats.

Masking is useful, not only for lighting adjustments but any time you wish to make a change to a particular area of your image such as sharpening, saturation, blurring, etc.

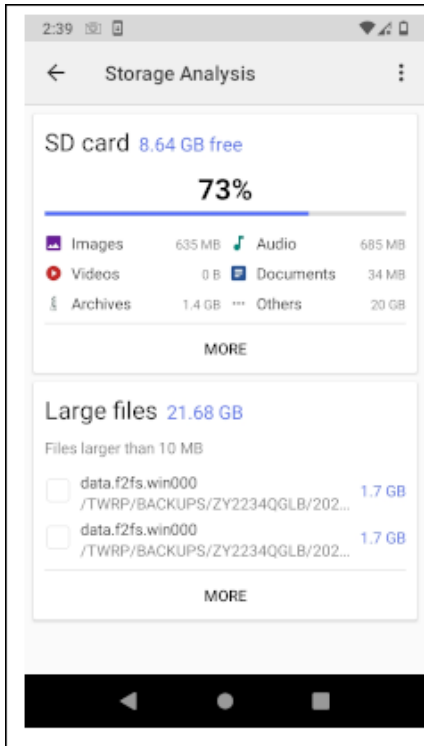
Please check out the video I have posted on YouTube: **Lighting masks in Photoscape X**. <https://youtu.be/CDHttWPRgD0>

Note: To install **PhotoScape X**

- Use a web browser to go to <http://photoscape.org/ps/main/download.php>
- Click on the **BLUE PhotoScape X for Windows 10** button. Your web browser will take you to the **PhotoScape X** page at the Microsoft Store. Click on the blue **Get** button.

Android's File System—Part 4 (continued from page 1)

process is both tedious and time consuming, a third-party app such as Norton Clean may be of assistance; however, while such utilities may well offer to remove "junk" files, their cache-clearing abilities may be severely limited on recent versions of Android.



used can be minimized. Files and folders can be deleted if they are no longer needed, or perhaps moved to archival storage on a PC or an external USB drive, in order to free up space on the Android disk.

In addition, a file manager, such as Cx File Explorer, can be helpful for the clean-up task as such utilities often feature the ability to analyze the storage used on a given disk (i.e. internal or external storage) and list the occurrence of large files. For exam-

Finally, it may be useful to analyze the storage that is in use in an attempt to identify any egregious space hogs. For example, the X-Plore File Manager app has a Disk Map feature that displays a graphical representation of the folders on a drive, by size, with the largest folders listed first. There may be limited opportunities for space savings on the internal storage device, other than disabling any system apps that are not used. However, external storage is another story since this is normally completely accessible to the end user. In this case, it may simply be a matter of identifying large folders and determining how the space

ple, the "large files" shown in the screenshot are system backups stored on the micro-SD card in my Android smartphone. Old backup files could be deleted or moved to archival storage in order to retrieve free space on the external storage device.

Conclusion

This series of articles has attempted to provide some details of Android's extremely complex file system that can be quite confusing to end users. One of the resulting consequences can be a lack of storage space that, in turn, inhibits efficient use of an Android device. In this final article in the series we have explored a number of options to retrieve free space on both internal and external storage devices. Should such measures prove insufficient the question becomes what further options are available.

One possibility is to simply increase the size of the installed micro-SD card should an SD card with greater capacity be supported by the specific Android device. Another option is to unlock the bootloader, install a custom ROM, and root the device. In general, such systems will have a much smaller footprint than the OEM-version of Android, will have fewer pre-installed apps, and rooting will provide the user with a much greater level of control over the entire system. For example, my Moto G3 running LineageOS 17.1 (Android 10), has more than 2 GB of free space in internal memory. Compare this to the 0.5 GB of free space when running OEM Android. However, the downside for many users can be the technical complexity of the custom ROM process and the (small) chance of "bricking" the device.

Finally, the ultimate solution for storage woes is simply to bite the bullet and purchase a new smartphone or tablet. Sure, there may be considerable cost involved, but a newer unit will doubtless have a faster processor, more RAM, more internal storage, support greater capacity external storage, have an enhanced display, and a higher-resolution camera. So, what are you waiting for...? Well, if you are anything like me, you just can't bring yourself to abandon an old, yet still-functional, Android device!

Quick Tip 41: Capturing a full web page

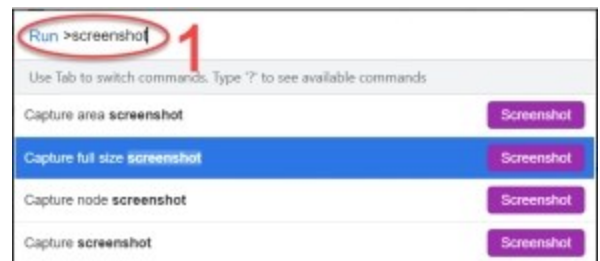
by Chris Taylor

Screen capture tools such as the Windows Snipping Tool are great for capturing what you see on the screen, but what if you want to capture an entire web page and you have to scroll to see it all?

Some third-party utilities such as Snagit and browser extensions can capture entire scrollable windows, but with Chromium-based web browsers such as Google Chrome, Microsoft Edge, Opera, Brave and Vivaldi you can capture an entire web page without installing anything.

In any Chromium-based browser press Ctrl-Shift-I to open *Developer Tools*. Then press Ctrl-Shift-P to run a developer tool. In the search box that pops up, type in *screenshot* (1 in image below) and click the second option: *Capture full size screenshot*.

The entire webpage will be captured and stored as a PNG graphic file in your Downloads folder.



OTTAWA PC NEWS

Ottawa PC News is the newsletter of the Ottawa PC Users' Group (OPCUG), and is published monthly except in July and August. The opinions expressed in this newsletter may not necessarily represent the views of the club or its members.

Member participation is encouraged. If you would like to contribute an article to Ottawa PC News, please submit it to the newsletter editor (contact info below). Deadline for submissions is three Sundays before the next General Meeting.

To receive the monthly newsletter by email, send an email to:

opcug-newsletter+subscribe@googlegroups.com (leave subject and body fields blank)

You do **not** need to create a Gmail or Google Groups account.

To subscribe to other OPCUG Google Groups member services, go to:

<https://opcug.ca/google-groups-how-to/>

Group Meetings

OPCUG meets on the second Wednesday in the month, except July and August, at the Riverside United Church, 3191 Riverside Drive, Ottawa. Parking is free at the church. OCTranspo bus #90 stops nearby. Details at <https://opcug.ca/venue/>.

(NOTE: Due to COVID-19 safety guidelines, all our events are via video conference until further notice. Details at <https://opcug.ca/venue/>)

Meetings are 7:30–9:00 p.m. followed by a Q&A Session until 10 p.m.

OPCUG Membership Fees: \$20 per year
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Follow us on Twitter: <https://www.twitter.com/opcug>

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Q&A HAS GONE ON-LINE! WEEKLY!

Because of the pandemic, the OPCUG is holding weekly Q&A sessions in Zoom video-conferences.

Join us every Wednesday (except on regular monthly meeting nights) at 7:30 pm to discuss computer issues. Questions (and answers) on any computer-related issue are welcome. Or, do you have a favourite computer program or topic that you would like to share with the group? Send your questions, answers, or the details of what you would like to share to: SuggestionBox@opcug.ca

Everyone is welcome to attend Q&A sessions and to ask questions about their specific computer-related problems. Join us at: <https://tinyurl.com/opcug-meeting> (if you use the Zoom client, the meeting ID is **924 9556 0898** and the password is **opcug**).

